

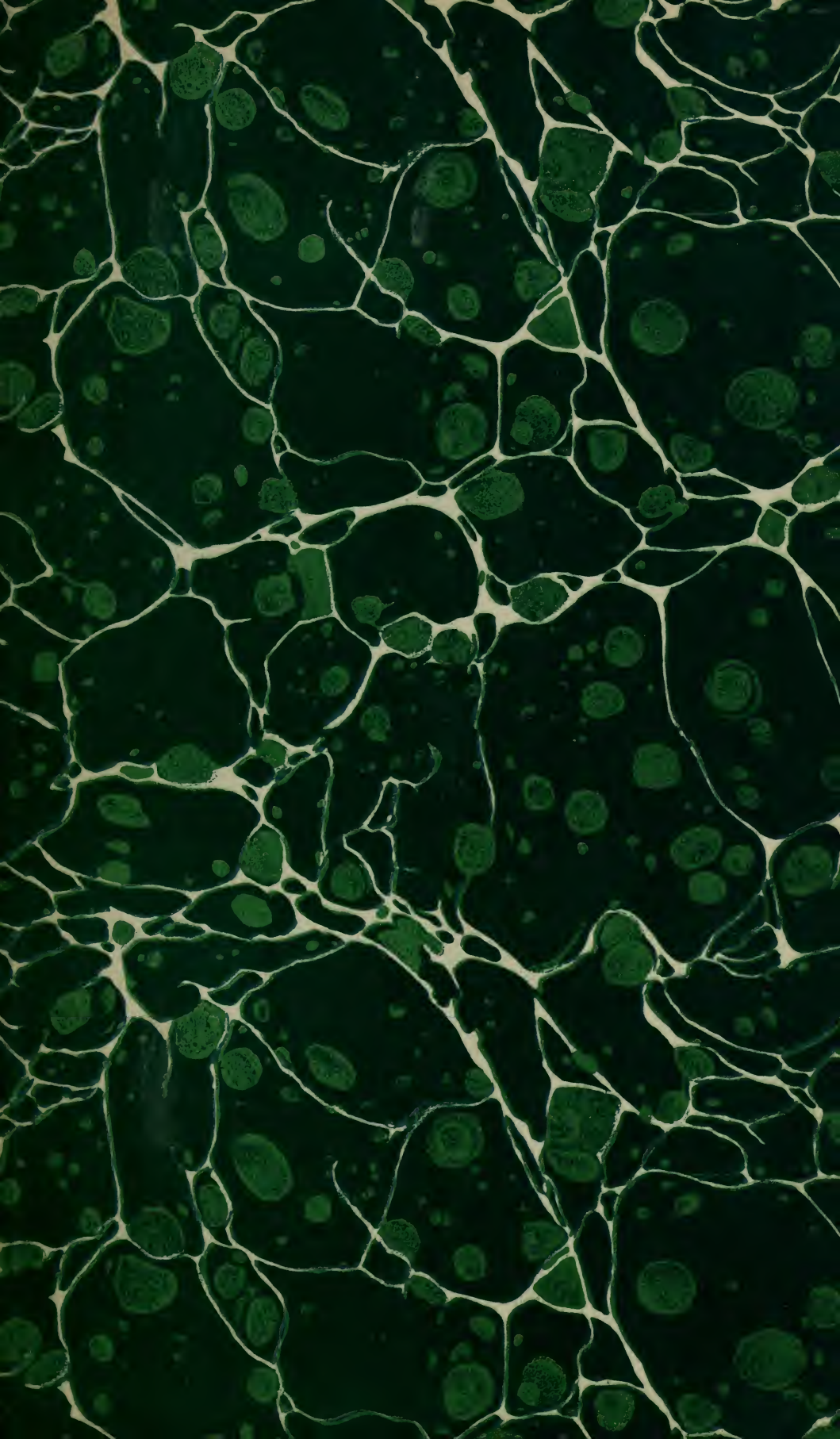
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

UNITED STATES
DEPARTMENT OF AGRICULTURE
LIBRARY



BOOK NUMBER 1
L61B
No. 41



41
U. S. DEPARTMENT OF AGRICULTURE.

LIBRARY—BULLETIN No. 41.

JOSEPHINE A. CLARK, LIBRARIAN.

LIST OF REFERENCES TO PUBLICATIONS
RELATING TO IRRIGATION AND
LAND DRAINAGE.

COMPILED BY

ELLEN A. HEDRICK.

PREPARED UNDER THE DIRECTION OF THE LIBRARIAN.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1902.

PUBLICATIONS OF THE LIBRARY OF THE DEPARTMENT OF AGRICULTURE.

BULLETINS.

- No. 1. Accessions to the Department Library [January-March], 1894.
2. Periodicals and society publications currently received at the Department Library. 1894.
3. Accessions to the Department Library, April-June, 1894.
4. Accessions to the Department Library, July-October, 1894.
5. Accessions to the Department Library, November-December, 1894.
6. Accessions to the Department Library, January-March, 1895.
7. Accessions to the Department Library, April-June, 1895.
8. Accessions to the Department Library, July-September, 1895.
9. List of publications of the U. S. Department of Agriculture from 1841 to June 30, 1895, inclusive. 1896.
10. Accessions to the Department Library, October-December, 1895.
11. Accessions to the Department Library, January-March, 1896.
12. Accessions to the Department Library, April-June, 1896.
13. Accessions to the Department Library, July-September, 1896.
14. Accessions to the Department Library, October-December, 1896.
15. Accessions to the Department Library, January-March, 1897.
16. References to the literature of the sugar beet, exclusive of works in foreign languages; compiled by Claribel R. Barnett. 1897.
17. Accessions to the Department Library, April-June, 1897.
18. Bibliography of poultry; compiled by Emma B. Hawks. 1897.
19. Accessions to the Department Library, July-September, 1897.
20. Reference list of publications relating to edible and poisonous mushrooms; compiled by Josephine A. Clark. 1898.
21. Accessions to the Department Library, October-December, 1897.
22. Accessions to the Department Library, January-March, 1898.
23. Accessions to the Department Library, April-June, 1898.
24. List of publications relating to forestry in the Department Library, 1898.
25. Accessions to the Department Library, July-September, 1898.
26. Accessions to the Department Library, October-December, 1898.
27. Accessions to the Department Library, January-March, 1899.
28. Accessions to the Department Library, April-June, 1899.
29. Accessions to the Department Library, July-September, 1899.
30. Accessions to the Department Library, October-December, 1899.
31. Accessions to the Department Library, January-March, 1900.
32. Accessions to the Department Library, April-June, 1900.
33. Accessions to the Department Library, July-September, 1900.
34. Accessions to the Department Library, October-December, 1900.
35. Accessions to the Department Library, January-March, 1901.
36. Accessions to the Department Library, April-June, 1901.
37. Catalogue of the periodicals and other serial publications (exclusive of U. S. Government publications) in the Library of the U. S. Department of Agriculture; prepared under the direction of Josephine A. Clark, librarian, 1901.
38. Accessions to the Department Library, July-September, 1901.
39. Accessions to the Department Library, October-December, 1901.
40. Accessions to the Department Library, January-March, 1902.
41. List of references to publications relating to irrigation and land drainage; compiled by Ellen A. Hedrick. 1902.
42. Catalogue of the publications relating to botany in the library of the U. S. Department of Agriculture. (In press.)

U. S. DEPARTMENT OF AGRICULTURE.

LIBRARY—BULLETIN No. 41.

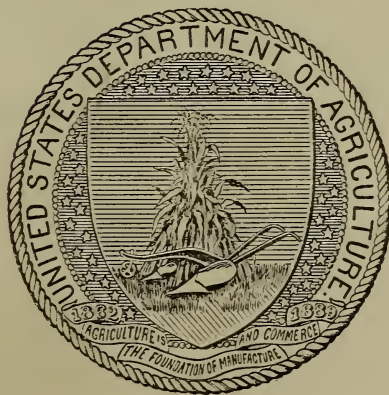
JOSEPHINE A. CLARK, LIBRARIAN.

LIST OF REFERENCES TO PUBLICATIONS
RELATING TO IRRIGATION AND
LAND DRAINAGE.

COMPILED BY

ELLEN A. HEDRICK.

PREPARED UNDER THE DIRECTION OF THE LIBRARIAN.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1902.

LETTER OF TRANSMITTAL

U. S. DEPARTMENT OF AGRICULTURE,
Washington, D. C., September 21, 1901.

SIR: I have the honor to transmit herewith and to recommend for publication as a bulletin of the Library of the Department a manuscript entitled "List of references to publications relating to irrigation and land drainage." This list has been prepared, in cooperation with the Office of Experiment Stations, by Miss Ellen A. Hedrick, who was appointed for the special work in connection with the irrigation investigations.

The list includes references to irrigation and land drainage principally, but it has been deemed advisable to include, also, references to a few allied subjects, such as hydraulics, and some departments of engineering. No attempt has been made to catalogue articles in periodicals except in the following cases, namely: Transactions and Proceedings of the American Society of Civil Engineers, Transactions and Proceedings of the Technical Society of the Pacific Coast, Minutes of Proceedings of the Institute of Civil Engineers, Journal and Proceedings of the Royal Society of New South Wales, and Annales des Ponts et Chaussées: Mémoires et documents.

The work has been done in the libraries of Washington containing the largest collection of books on the subjects mentioned. Books which are available for reference in these libraries are indicated by abbreviations after the entries.

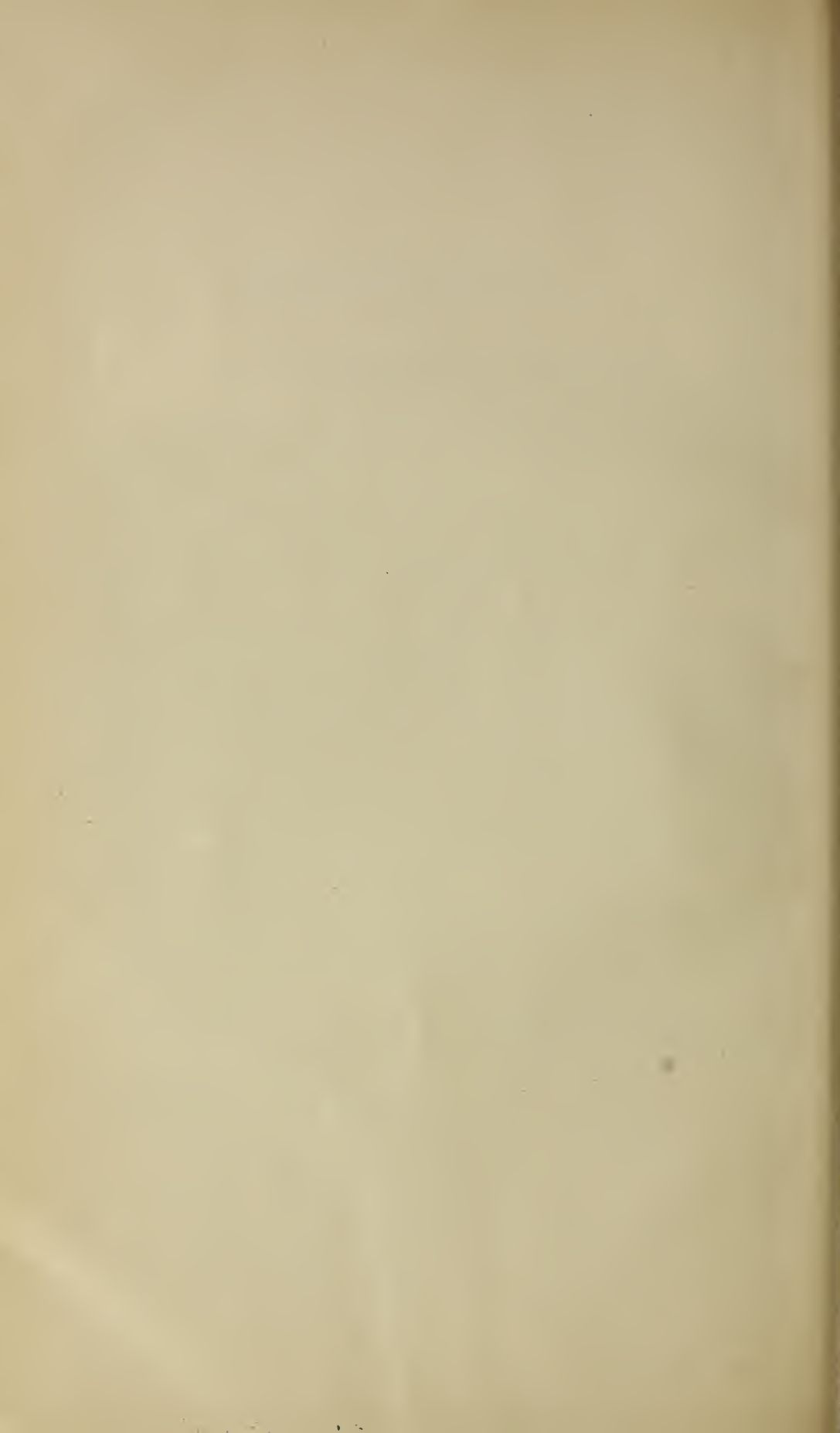
Respectfully,

JOSEPHINE A. CLARK,
Librarian.

Hon. JAMES WILSON,
Secretary of Agriculture.

CONTENTS.

	Page.
Author list.....	5
Periodicals.....	162
Subject index.....	165
	3



LIST OF REFERENCES TO PUBLICATIONS RELATING TO IRRIGATION AND LAND DRAINAGE.

ABBREVIATIONS.—W^A=Library of the Department of Agriculture. W^G=Library of the Geological Survey. W^P=Library of the Patent Office. W^C=Library of Congress. References marked * could not be verified.

- 1 Abbot, Henry Larcom. Practical gauging of rivers. (*In Professional papers on Indian engineering.* 7:183-188. 1870.)
Remarks addressed to the Essay club of the Corps of United States engineers.
— See also, as joint author, Humphreys, A. A.
- Abbott, Edwin Hale. See, as reviewer, Humphreys, A. A.
- 2 Abbott, T. K. Wells in Liverpool plains [New South Wales]. (*In Roy. soc. N. S. W. Jour. and proc.*, 1880. 14:281-292. map. 1881.)
— —; [reprint]. (*In N. S. W.—Roy. comm. conservation of water.* First report. Appendix K 1. pp. 44-47. 1885.) W^A
- 3 Abbott, W. E. Water supply in the interior of New South Wales. (*In Roy. soc. N. S. W. Jour. and proc.*, 1884. 18:85-111. map. 1885.)
- 4 Abel, Gustav, and Vincent, Otto. Die drainage, deren theorie und praxis. Ed. 6, rev. pp. 235. pl. 8°. Leipz., Baumgärtner's buchhandlung, 1882. W^G
Vom Mecklenburger patriotischen verein gekrönte preisschrift.
Preface of 1st edition is dated 1853.
- Ablett, W. H. See, as editor, Roland, Arthur.
- 5 Acheson, Frederick. Essay on the collection and storage of water in Victoria. pp. 47. map. 8°. Melbourne, Govt., 1861. W^C
Victorian Government prize essay.
- 6 Adams, Arthur L. Stave pipe, its economic design and the economy of its use. (*In Amer. soc. civ. eng. Proc.* 24:676-708. il. 1898; with discussion, *Trans.* 41:27-84. il. 1899.)
- Adler, Georg Christian. See, as editor, Frontinus, Sextus Julius.
- Akers, W. R. See, as state engineer, Nebraska—Irrigation, State board of.
- Albuquerque, N. Mex. See, for irrigation congress held here in 1895, National irrigation congress, Official report.
- Aleksandrovich, K. G. See, as engineer, Russia—Public works ministry.

- 7 Alexander, B. S., Mendell, G. H., and Davidson, George. Report upon desert lands of Kern county. (*In Haggin, J. B.* Desert lands of Kern county, Cal. pp. 300-306. 1877.)
- 8 *Alfonso-Spagna, F. Studii sulla economia della acque. pp. 176. Palermo. 1864.
- 9 Allen, Parker Roscoe. Periyar tunnel. (*In Inst. civ. eng.* Min. of proc. 128:164-172. il. 1897.)
Discussion and correspondence on this paper and the paper on Diversion of the Periyar, by John Pennycuick, are given, 128:173-205.
- 10 *Amenduni, Giovanni. Sulle opere di bonificazione, della plaga litoranea dell' Agro Romano. Text & plates [2 v.]. Roma, 1884.
- 11 American society of civil engineers. Proceedings . . . v. 1-26. 8°. N. Y., 1876-1900. W^A W^G W^P W^C
Papers are first issued in the *Proceedings* and are afterwards reissued in the *Transactions*, with discussions. Papers were not issued in the *Proceedings* previous to volume 23. Such papers as relate to irrigation are entered in the list under their respective authors.
- 12 — Report of committee on the cause of failure of the South Fork dam. (*In Amer. soc. civ. eng.* Trans. 24:431-469. pl. maps. 1891.)
Paging given includes discussion on the subject.
Committee consisted of James B. Francis, W. E. Worthen, M. J. Becker, and A. Fteley.
- —; [abstract]. (*In Instit. civ. eng.* Min. of proc. 106:364-366. 1891.)
- 13 — Transactions. v. 1-44. 8°. N. Y., 1872-1900. W^A W^G W^P W^C
See note under *American society of civil engineers*, *Proceedings*.
- 14 American society of irrigation engineers. Annual for 1892-93. v. [1]. 8°. Denver. 1893. W^A
Continued under the title *Transactions*.
- 15 — Cession of the public lands, etc.; resolutions adopted by society and paper relative to cession of public lands to the States, forestry, irrigation, etc. pp. 37. il. 8°. [Wash., Govt., 1897.] (*U. S.—Senate.* 55th Cong., 1st sess. S. doc. 130. *In* v. 5.) W^A
Includes paper by Elwood Mead on Arid public lands, their reclamation, management, and disposal.
- 16 — Constitution and by-laws adopted by the Annual convention, Dec. 28, 1892. pp. 30. 16°. Denver. 1893. W^G
With list of members.
- 17 — Transactions, Jan., 1895-Jan., 1897. v. 2, no. 1-3. 8°. Denver. 1895-97. W^A
v. 2, no. 1-2, title reads *Quarterly*.
For v. 1, see *American society of irrigation engineers*, *Annual*.
- 18 *Anderegg, J. Der rationelle wiesenbau in gebirgsgegenden. Stuttg., 1879.
- 19 *Anderson, J. Practical treatise on draining bogs and swampy ground. 8°. Lond., 1797.
- 20 Anderson, J. C. Financial results of Madras canals. (*In Professional papers on Indian engineering.* 3:392-401. 1866.)
Memorandum from the report of the Ganges canal committee.
- 21 — Irrigation in the Madras Presidency; report. (*In Professional papers on Indian engineering.* 6:361-385. map. 1869.)

- 22 **Anderson, R. C.** Tables for facilitating the calculation of every detail in connection with earthen and masonry dams. pp. 406. pl. 8°. Lond., H. S. King, 1876. W^P
 Contains as appendix, Report on the design and construction of masonry dams, by W. J. Macquorn **Rankine**.
- 23 **Anderson, William.** Notes of a journey through the northeast portion of the delta of the Nile in April, 1884. (*In Instit. civ. eng. Min. of proc.* 76:346-354. 1884.)
- 24 **Andrade Corvo, J. de.** Mémoire sur les rizières du Portugal. (*In Ann. des ponts et chaussées: mém. et doc.*, 1862, semest. 2. pp. 217-247.)
- 25 **Andreossy, Antoine François.** Histoire du Canal du Midi, ou Canal de Languedoc, considéré sous les rapports d'invention, d'art, d'administration, d'irrigation, et dans ses relations avec les étangs de l'intérieur des terres qui l'avoisinent. New ed. Text & plates 2 v. sq. 4°. Paris, 1804. W^C
- 26 **Annales des ponts et chaussées; mémoires et documents relatifs à l'art des constructions et au service de l'ingénieur, 1831-1900.** ser. 1, v. 1-ser. 7, v. 28. 8°. Paris, Librairie des corps nationaux des ponts et chaussées, des mines et des télégraphes, n. d. W^G W^C W^P
 Each series covers a period of ten years and contains twenty volumes, except the seventh which has twenty-eight volumes.
 Such papers as relate to irrigation are entered in the list under their respective authors.
- 27 **Apulian aqueduct: [abstract].** (*In Instit. civ. eng. Min. of proc.* 143:373. 1901.)
 Original paper in *Giornale del genio civile*, May, 1900. p. 205.
- 28 **Argentine Republic.—Public works ministry.** Report to the Director-General of Public works on the present state of the San Roque water-dam; by Frederico Stavelius; [abstract]. (*In Instit. civ. eng. Min. of proc.* 112:419-421. 1893.)
 Original paper in *Anales de la Sociedad científico argentina*, Buenos Ayres. il. Sept., 1892.
- 29 **Arizona agricultural experiment station.** Agricultural development in southwestern Arizona, pumping water for irrigation; [by F. A. Gulley and C. B. Collingwood]. pp. 15-24. 8°. Tucson, 1893. (Bulletin 11.) W^A
- 30 — Irrigation in Arizona; [by V. E. Stolbrand]. pp. 14. 8°. Tucson, 1891. (Bulletin 3.) W^A
- 31 **Arnaud, Alessandro.** Sui serbatoi artificiali di acqua a beneficio dell' irrigazione. pp. 31. 8°. Saluzzo, Rovera e Compagno, 1893. W^A
 Estratto dal *Bollettino del Comizio agrario di Saluzzo*, 1893.
- Artesian and underflow investigation and irrigation inquiry.** *See United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry.*
- 32 ***Ascono, Antonio.** Manuale teorico-pratico sull' uso delle acque per la derivazione e la condotta di esse e per le irrigazione de campi, etc. pp. 176. pl. 8°. Milan. Silvestri, 1836.
- 33 **Ashhurst, Francis Henry.** Reconstruction of the Bhim Tal dam, Kumaon, N. W. P., India. (*In Instit. civ. eng. Min. of proc.* 75:202-210. 1884.)

- 34 Association of American agricultural colleges and experiment stations. Proceedings of 13th annual convention, July 5-7, 1899; edited by A. C. True, W. H. Beal, and H. H. Goodell. pp. 112. 8°. Wash., Govt., 1900. (U. S.—*Agriculture, Dept. of—Experiment Stations, Office of*. Bulletin 76.) W^A
- At the meeting of the section on agriculture and chemistry, alkali and irrigation in the West were subjects of discussion. R. H. Loughridge, B. C. Buffum, F. W. Traphagen, L. G. Carpenter, A. C. True, Elwood Mead, E. J. Wickson, and A. J. McClatchie made short addresses.
- 35 Aubuisson de Voisins, Jean François d'. Treatise on hydraulics for the use of engineers; translated from the French and adapted to the English units of measure, by Joseph Bennett. pp. 532. pl. 8°. Boston, Little, Brown & co., 1852. W^P
- 36 Auchincloss, W. S. Waters within the earth and laws of rainflow. pp. 43. il. 8°. Phila., W. S. Auchincloss, 1897. W^G
- Aughey, Samuel. See, as commissioner, **United States—Agriculture, Department of**, Artesian wells upon the Great plains; report of geological commission.
- 37 Aymard, Maurice. Étude sur les irrigations de la Métidja et les cours d'eau de l'Atlas. (*In Ann. des ponts et chaussées: mém. et doc.*, 1853. semest. 2. pp. 46-131. pl.)
- 38 — Irrigation works of Alicanti, in Spain; [abstract]. (*In Instit. civ. eng. Min. of proc.* 45:309. 1876.)
Original paper in *Annales du Génie civil*. 2d ser. 4:638, 688.
- 39 — Irrigations du midi de l'Espagne, études sur les grands travaux hydrauliques et le régime administratif des arrosages de cette contrée; par Aymard, précédé d'un rapport de M. Lebasteur. Text & atlas [2 v.]. 8° & f°. Paris, Eugène Lacroix, 1864. (Publications scientifiques, industrielles et agricoles de E. Lacroix.) W^G
- 40 — Mémoire sur la pratique des arrosages en Algérie. (*In Ann. des ponts et chaussées: mém. et doc.*, 1870, [semest. 1]. pp. 236-300.)
- 41 Babb, Cyrus C. Hydrography of the Potomac basin. (*In Amer. soc. civ. eng. Trans.* 27:21-38. chart. 1891.)
- 42 — Rainfall and river-flow. (*In Amer. soc. civ. eng. Trans.* 28:323-347. pl. 1893.)
Paging given includes discussion on the paper.
- 43 Bachmann. Arched masonry dams; [abstract]. *In Instit. civ. eng. Min. of proc.* (138:504. 1899.)
Original paper in *Centralblatt der bauverwaltung*, 1899. p. 10.
- 44 Bailey, Gilbert E. [Artesian waters and geology of the southwest section of the state of South Dakota, and eastern section of Wyoming.] (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Preliminary investigation, etc. pp. 65-70. 1890.)
- Bain, Thomas. See **Cape of Good Hope—Lands, mines, and agriculture, Department of**. Report of geological and irrigation surveyor, 1892—Report on Calitzdorp irrigation scheme.
- 45 Baker, Benjamin. River Nile. (*In Instit. civ. eng. Min. of proc.* 60:367-379. 1880.)

- 46 **Baker, Ira O.** Treatise on masonry construction. Ed. 2. pp. 552. il. pl. 8°. N. Y., Wiley & sons, 1890. W^G
- 47 **Baker, M. N., editor.** Manual of American water-works, compiled from special returns, containing the history, details of construction, mode of water supply, cost, etc., of every water-works in the United States and Canada. pp. 611. 8°. N. Y., Engineering news, 1889. W^G
- — 4th issue. pp. 611. 8°. N. Y., Engineering news, 1897. W^A
- 48 **Barbet, —.** Note sur le calcul des barrages de réservoirs en maçonnerie. (*In Ann. des ponts et chaussées: mém. et doc.*, 1898, trimest. 2. pp. 265–299.)
- 49 — — Note sur les conditions de résistance des barrages de réservoirs en maçonnerie. (*In Ann. des ponts et chaussées: mém. et doc.*, 1899, trimest. 1. pp. 22–56.)
- 50 **Barbour, Erwin Hinckley.** Wells and windmills in Nebraska. pp. 85. il. pl. 8°. Wash., Govt., 1899. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of. Water supply and irrigation papers.* 29.) W^A
- — (*U. S.—House of Representatives.* 55th Cong. 3d sess. H. doc. 299. *In v.* 73.) W^A
- 51 **Barilari, —.** Survey of the course of the Po; [abstract]. (*In Instit. civ. eng. Min. of proc.* 49:330–333. 1877.)
Original paper in *Giornale de genio civile.* 14:611.
- 52 **Barker, F. C.** Irrigation in Mesilla valley, New Mexico. pp. 51. il. pl. map. 8°. Wash., Govt., 1898. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of. Water supply and irrigation papers.* 10.) W^A
- — (*U. S.—House of Representatives.* 55th Cong. 2d sess., H. doc. 301. *In v.* 60.) W^A
- 53 **Barois, Julien Hippolyte Eugène.** Irrigation dans les Indes. (*In Ann. des ponts et chaussées: mém. et doc.*, 1891, semest. 2. pp. 261–311.)
- 54 — — L'irrigation en Égypte. Text & plates [2 v.]. 4°. [Paris, Imprimerie nationale, 1887.] (*France—Agriculture, Ministère de l'—Hydraulique agricole, Direction de l'. Bulletin.* fasc. H.) W^G
- — Paris, Imprimerie nationale, 1887.
- — *English.* Irrigation in Egypt; translated by A. M. Miller. pp. 113. pl. maps. 4°. Wash., Govt., 1889. (*U. S.—House of Representatives.* 50th Cong. 2d sess. H. mis. doc. 134.) W^A W^G
- 55 **Barr, William M.** Pumping machinery: a practical hand-book relating to the construction and management of steam and power pumping machines. pp. 447. il. pl. 8°. Phila., J. B. Lippincott co., 1893. W^P W^C
- 56 **Barraclough, S. H., and Strickland, T. P.** Experimental investigation of the flow of water in uniform channels. (*In Roy. Soc. N. S. W. Jour. and proc.*, 1897. 31:356–376. 1897.)

- 57 **Barral, Jean Augustin.** Agriculture, les prairies et les irrigations de la Haute-Vienne; rapports. pp. 771. pl. 4°. Paris, Imprimerie nationale, 1884. (**France—Agriculture, Ministère de l'—Agriculture, Direction de l'.**) W^G W^A
- 58 * ——— Drainage des terres arables. Ed. 3. 2 v. il. pl. Paris, Librairie agricole de la maison rustique, 187—.
- 59 ——— Irrigations dans le département de Vaucluse; rapport sur le concours ouvert en 1876 pour le meilleur emploi des eaux d'irrigation. pp. 595. pl. 7. map. f°. Paris, Imprimerie nationale, 1877. (**France—Agriculture et du commerce, Ministère de l'—Agriculture, Direction de l'.**) W^G
- 60 ———; rapport sur le concours ouvert en 1877 pour le meilleur emploi des eaux d'irrigation. pp. 582. il. pl. 6. f°. Paris, Imprimerie nationale, 1878. (**France—Agriculture et du commerce, Ministère de l'—Agriculture, Direction de l'.**) W^A W^G
- 61 ——— Irrigations dans le département des Bouches-du-Rhône; rapport sur le concours ouvert en 1875 pour le meilleur emploi des eaux d'irrigation. pp. 548. il. pl. 4. f°. Paris, Imprimerie nationale, 1876. (**France—Agriculture et du commerce, Ministère de l'—Agriculture, Direction de l'.**) W^A W^G
Analyses, chemical and botanical, of different kinds of hay grown in this district are given in chap. 30, pp. 463-486.
- 62 ———; rapport sur le concours ouvert en 1876 pour le meilleur emploi des eaux d'irrigation. pp. 271. pl. f°. Paris, Imprimerie nationale, 1876. (**France—Agriculture et du commerce, Ministère de l'—Agriculture, Direction de l'.**) W^A W^G
Analyses of different kinds of hay are continued in chap. 24, pp. 224-257.
- 63 * ——— Législation du drainage, des irrigations et autres améliorations foncières permanentes. pp. 664. il. pl. Paris, Librairie agricole de la maison rustique, 1862.
- Barrett, W. W.** *See, as superintendent, North Dakota—Irrigation and forestry. Department of.*
- 64 * **Baudot, J. G.** Des réservoirs du Nil. pp. 15. Vichy, Bougarel, 1894.
- 65 **Baumgarten.** —. Notice sur le moulinet de Woltmann, destiné à mesurer les vitesses de l'eau, sur son perfectionnement et sur les expériences faites avec cet instrument. (*In Ann. des ponts et chaussées: mém. et doc., 1847, semest. 2. pp. 326-374. pl.*)
- 66 ——— Notice sur les rivières de la Lombardie et principalement sur le Pô. (*In Ann. des ponts et chaussées: mém. et doc., 1847, semest. 1. pp. 129-199. pl.*)
Analyse des différents mémoires de M. Lombardini.
- 67 ——— Rapport à M. le ministre des travaux publics sur plusieurs travaux de colmatage, de dessèchement et d'irrigation, exécutés en Italie. (*In Ann. des ponts et chaussées: mém. et doc., 1853, semest. 1. pp. 289-318. pl.; 1854, semest. 2. pp. 217-232.*)
- 68 **Bazaine.** Étude sur l'influence des irrigations sur l'altitude d'une nappe souterraine, avec application aux irrigations pratiquées à Gennevilliers. (*In Ann. des ponts et chaussées: mém. et doc., 1883, semest. 1. pp. 34-60. pl.*)

- 69 Bazin, H. Étude comparative des formules nouvellement proposées pour calculer le débit des canaux découverts. (*In Ann. des ponts et chaussées: mém. et doc.*, 1871, [semest. 1.] pp. 9-43. pl.)
- 70 — Étude d'une nouvelle formule pour calculer le débit des canaux découverts. (*In Ann. des ponts et chaussées: mém. et doc.*, 1897, trimest. 4. pp. 20-70. pl.)
- * — — pp. 55. pl. Paris, 1898.
- 71 — Expériences nouvelles sur l'écoulement en déversoir. (*In Ann. des ponts et chaussées: mém. et doc.*, 1888, semest. 2. pp. 393-448. pl.; 1890, semest. 1. pp. 9-65. pl.; 1891, semest. 2. pp. 445-520. pl.; 1894, semest. 1. pp. 249-357. pl.; 1896, semest. 2. pp. 645-731. pl.; 1898, trimest. 2. pp. 151-264. pl.)
- Abstracts of 1st, 2d, and 4th articles entitled New experiments on the flow of water over weirs are given in *Instit. civ. eng. Min. of proc.* 96:372-374. 1889; 101:322-324. 1890; 117:421-423. 1894.
- * — *English.* Recent experiments on the flow of water over weirs. article 1; translated by Arthur Marichal and John C. Trautwine, jr. pp. 52. pl. [Phila.? 1890?]
- * — —, article 6; translated by G. T. Nelles. [pp. 33.] n. p. 1899.
- 72 — Experiments upon the contraction of the liquid vein issuing from an orifice and upon the distribution of the velocities within it; translated by John C. Trautwine, jr. Ed. 1. pp. 64. pl. 8°. N. Y., J. Wiley & sons, 1896. W^P
- Translated from *Mémoires présentés par divers savants à l'Académie des sciences de l'Institut de France*, v. 32.
- 73 — Notice sur les travaux d'agrandissement du réservoir de Panthier, canal de Bourgogne. (*In Ann. des ponts et chaussées: mém. et doc.*, 1880, semest. 2. pp. 241-260. pl.)
- —: [abstract]. (*In Instit. civ. eng. Min. of proc.* 64: 365-367. 1881.)
- See also, as joint author, Darcy, Henri Philibert Gaspard.
- 75 Beach, Horace. [Finding of artesian waters in the Dakotas.] (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 141-144. 1890.)
- See also, as commissioner, United States.—*Agriculture, Department of*, Artesian wells upon the Great plains; report of geological commission.
- 76 Beardmore, Nathaniel. Manual of hydrology. pp. 384. pl. 18. 8°. Lond., Waterlow and sons, 1862. W^P
- CONTENTS—1. Hydraulic and other tables.—2. Rivers, flow of water, springs, wells, and percolation.—3. Tides, estuaries, and tidal rivers.—4. Rainfall and evaporation.
- 77 * Beck, Otto. Land- und volkswirtschaftliche tagesfragen über ent- und bewässerungsanlagen. Trier, 1866-1868.
- 78 * Becker, Max. Der wasserbau in seinem ganzen umfange; ein leitfaden zu vorlesungen und zum selbstunterrichte für wasser- und strassenbau-ingenieure und andere techniker. Text & plates [2 v.]. 8° & f°. Stuttg., 1856.

- * **Becker, Max**—Continued.
 * ——— Ed. 2. Stuttgart, 1861.
 * ——— Ed. 3. Leipzig, 1882. (*Handbuch der ingenieur-wissenschaft.* v. 4.)
- 79 * **Belgrand, Marie François Eugène.** Coup d'œil d'ensemble sur le régime des principales rivières du nord, du centre et du midi de la France. pp. 8. 1875.
 Extrait des Comptes rendus de l'Académie des sciences, Paris.
- 80 ——— Des distributions d'eau en Égypte et en Grèce. (*In his Travaux souterrains de Paris.* 2:[6]–15. 1875.) W^G
 ———, analyse et extraits; par Malézieux. (*In Ann. des ponts et chaussées: mém. et doc.,* 1875, semest. 2. pp. 376–381.)
- 81 ——— Études hydrologiques dans le bassin de la Seine entre la limite des terrains jurassiques et Paris. (*In Ann. des ponts et chaussées: mém. et doc.,* 1852. semest. 1, pp. 1–229. pl.)
- 82 ——— Travaux souterrains de Paris. Text 5 v. & atlases [5 v.]. il. pl. text 4^o & atlases f^o. Paris, Dunod, 1873, 75, 77, 82, 87. W^G W^P
 CONTENTS.—V. 1. La Seine, régime de la pluie, des sources, des eaux courantes; application à l'agriculture.—V. 2. Les aqueducs romains.—V. 3. Les anciennes eaux.—V. 4. * Les eaux nouvelles.—V. 5. * Les égouts et les vidanges.
 An analysis and abstract of volume two is given in *Ann. des ponts et chaussées: mém. et doc.,* 1875, semest. 2, pp. 375–406.
- 83 ——— and **Lemoine, G.** Observations sur les cours d'eau et la pluie; centralisées pendant l'année 1872, 1873, 1874, 1875. charts. [4 v.] n. p. [1872, 73, 74, 75.] (*France—Ponts et chaussées—Service hydrométrique du bassin de la Seine.*) W^G
- 84 * **Bélibor, Bernard Forrest de.** Architecture hydraulique, ou l'art de conduire, d'élever et de ménager les eaux pour les différents besoins de la vie. 4 v. 4^o. Paris, 1782–90.
Belin, E. See, as joint author, **Chauveau des Roches, A.**
- 85 **Bell, J. H.** Colleroon annicuts. (*In Madras Presidency—Public works department.* Colleroon annicuts; reports.)
 ——— See also, as editor, **Reports** on various professional subjects of the corps of engineers, Madras Presidency.
- 86 **Beloe, Charles H.** Construction of catch-water reservoirs in mountain districts, for the supply of towns, or for other purposes. pp. 48. pl. 8^o. Lond., E. & F. N. Spon, 1872. W^G
- 87 **Bengal—Public works department—Irrigation department.** Administration report, 1892–93—1899–1900. maps. f^o. Calcutta, Govt., 1893–1900. W^G
- 88 ——— Papers from 1865 to 1893 regarding the Eden canal. pp. 487. maps. f^o. Calcutta, Govt., 1893.
- 89 * ——— Papers from 1866 to 1870 regarding the Damodar canal project.
- 90 ——— Papers relating to the Orissa canals; 1869 to 1877 and 1881 to 1883. pp. 189+43. map. f^o. Calcutta, Govt., 1884. (Selections from the records of the Govt. of Bengal.)

- Bengal—*Public works department—Irrigation department*—Cont'd.
- 91 ——— Revenue report for the year 1887–88. maps. f°. Calcutta, Govt., 1889.
- Bennett, Joseph. *See*, as translator, Aubuisson de Voisins, Jean François d'.
- 92 Benton, J. Report on hydraulic experiments on the Bari Doab canal to ascertain the most suitable form for notches of falls on the Sirhind canal. pp. 38+[1]. pl. f°. Lahore, Govt., 1879. ([*Punjab—Public works department—Irrigation branch.*])
- 93 Beresford, J. S. Memorandum on the irrigation duty of water and the principles on which its increase depends. pp. [11]. f°. n. p., [1875].
- 94 ——— Proposed standard designs with estimate and specification for masonry outlets for distributaries, divided into seven classes. pp. 9. pl. f°. Naini Tal, 1882.
- 95 Bernard, —. Nouveaux principes d'hydraulique appliqués à tous les objets d'utilité, et particulièrement aux rivières; précédés d'un discours historique et critique sur les principaux ouvrages qui ont été publiés sur le même sujet. pp. 331. pl. 4°. Paris. Didot l'aîné, 1787. W^P
- 96 Berry, Thomas. Duty of water under Amity canal [Colorado]. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 159–170. il. pl. 1900.)
 ——— (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Duty of water in Nebraska. pp. 159–170. il. pl. 1901.)
- 97 Berthot, P. Traité de l'élévation des eaux; calculs et renseignements pratiques. pp. 380. il. 8°. Paris, Baudry et cie., 1893.
 CONTENTS—Pompes à main.—Emploi des moteurs à vent et à eau.—Pompes centrifuges.—Emploi des moteurs à vapeur, à gaz, électriques.—Pompes d'alimentation.—Appareils hydrauliques.—Ascenseurs.—Emploi de l'air et des gaz comprimés.—Pulsomètres.—Injecteurs.—Ejecteurs.—Béliers hydrauliques.
- 98 Bertrand, L. Description et usage d'un abaque destiné à faciliter la solution des problèmes relatifs à la distribution des eaux. Paris, Berger-Levrault et cie., 1895.
- Best, S. Colleroon annicuts. (*In Madras Presidency—Public works department.* Colleroon annicuts; reports.)
- 99 ——— Description of the sluice of irrigation called the Modulo Magistrale, prefaced by remarks on the taxation of irrigated lands. *In Reports* on various professional subjects, Madras Presidency. Ed. 2. 2:221–224. 1859.)
- 100 ——— Memorandum on the system of irrigation in the Madras Presidency. (*In Reports* on various professional subjects, Madras Presidency. Ed. 2. 2:96–101. il. pl. 1859.)
 ——— *See also*, as translator, Ferrari, Bernardino.
- 101 Bidder, George Parker. On the discharge from under-drainage and its effect on the arterial channels and outfalls of the country. (*In Instit. civ. eng.* Min. of proc. 21:48–130. pl. 1862.)
 Paging includes discussion on the subject.

- 102 **Bignami, Emilio.** I canali nella città di Milano. Ed. 2. pp. 116. map. 8°. Milano, 1868. W^C
- 103 **Billingsley, J. J. W.** Manufacture of drain tile. (*In Elliott, C. G. Practical farm drainage.* 1882.)
- 104 **Binnie, Alexander Richardson.** Nágpúr waterworks; with observations on the rainfall, flow from the ground, and evaporation at Nágpúr. (*In Instit. civ. eng. Min. of proc.* 39:1-61. pl. 1875.)
 For later paper on these waterworks, see **Penny, Edmund**, Nágpúr waterworks extension.
- 105 **Björling, Philip R.** Water or hydraulic motors. pp. 287. il. 12°. Lond., E. & F. N. Spon, 1894. W^G W^P
- Black, Henry C.** *See, as editor, Pomeroy, John Norton.*
- 106 **Blackwell, Thomas Evans.** Results of a series of experiments on the discharge of water by overfalls or weirs. (*In Instit. civ. eng. Min. of proc.* 10:331-353. pl. 1851.)
- 107 **Blaine, Robert Gordon.** Hydraulic machinery; with an introduction to hydraulics. pp. 383. il. pl. 8°. Lond., E. & F. N. Spon, 1897. (*Finsbury technical manuals.*) W^G W^P
- 108 **Bloss, John M.** Drainage; address delivered before the Marion county horticultural society, Salem, Oregon. pp. 11. il. 8°. Corvallis, 1893. (*Oregon agric. exper. sta. Bulletin* 26.) W^A
- 109 **Blotnitzki, L.** Ueber die bewässerungskanäle in den Walliser-Alpen. pp. 46. pl. 6. 8°. Bern, Rieder & Simmen, 1871. W^C
 Verfasst im auftrag des Comité der landwirthschaftlichen gesellschaft der romanischen Schweiz.
- 110 **Bodmer, George Rudolph.** Hydraulic motors, turbines, and pressure engines; for the use of engineers, manufacturers, and students. pp. 525. il. pl. 12°. Lond., Whittaker & co., 1889. (*Specialists' ser.*) W^P
- *See also, as translator, Weyrauch, Jacob J.*
- 111 **Bodson, —, Detienne, E., and Leclercq, F.** Gileppe dam; [abstract]. (*In Instit. civ. eng. Min. of proc.* 48:312-314. 1877.)
 Original papers in *Annuaire de l'Association des ingénieurs de Liège.* 2d ser. 5:281; 6:268, 421. pl. 14.
- 112 **Body, John Benjamin.** Drainage of the valley of Mexico. (*In Instit. civ. eng. Min. of proc.* 143:286-294. pl. 1901.)
- 113 **Boggs, Edward M.** Study of water rights on Los Angeles river, California. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 327-351. 1901.)
- 114 **Boileau, P.** New ideas on hydraulics, chiefly relating to pipes, canals, and rivers, with a theory of the estimation of molecular resistances; [abstract]. (*In Instit. civ. eng. Min. of proc.* 59:361-364. 1880.)
 Original paper in *Mém. de la Soc. national des sciences naturelles et mathématiques de Cherbourg.* 21:5-182.
- 115 — New process for gauging rivers; [abstract]. (*In Instit. civ. eng. Min. of proc.* 57:351. 1879.)
 Original paper in *Comptes rendus de l'Académie des sciences.* 88:650.

- Boileau, P.—Continued.
- 116 — Notions nouvelles d'hydraulique; concernant principalement les tuyaux de conduite, les canaux et les rivières. Ed. 2 rev. pp. 224. pl. sq. 4°. [Versailles], 1881. W^P
- 117 — Properties common to pipes, canals, and uniform rivers; [abstracts]. (*In* *Instit. civ. eng.* Min. of proc. 44:257. 1876; 49:317, 318. 1877; 51:359–361. 1878.)
Original papers in *Comptes rendus de l'Académie des sciences.* 82:601–604; 84:326; 85:429–432.
- 118 — Retarding effect of the sides of pipes on the flow of liquids; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 56:327. 1879.)
Original paper in *Comptes rendus de l'Académie des sciences.* 87:48, 134.
- 119 * — *Traité de la mesure des eaux courantes, ou expériences, observations et méthodes concernant les lois des vitesses, etc.* pp. 361. pl. Paris, 1854.
- 120 Boissay, C. Results of irrigation, drainage, and replanting of desert land; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 56:341. 1879.)
Original paper in *La Nature*, Feb. 8, 1879, p. 154.
- 121 Boix, E. *Estabilidad de las construcciones de mampostería.* Text & atlas [2 v.]. Madrid, G. Juste, 1889.
In this work the walls of the principal reservoirs of France and Spain are compared.
- 122 Bombay Presidency—*Public works department.* Administration report, irrigation, 1886–87—1899–1900. pl. maps. f° Bombay, Govt., 1887–1900. W^G
- 123 — — Annual irrigation revenue report, Sind, 1885–86—1898–99. pl. maps. f°. [Bombay, Gov't., 1886–1900.] W^G
- 124 — — Correspondence relating to the Nira canal, 1877–80. v. p. [Bombay, Govt., 1881.]
- 125 — — Irrigation revenue report of the Bombay Presidency, excluding Sind, 1885–86—1899–1900. maps. f°. [Bombay, Govt., 1886–1900.] W^G
- 126 — — Mutha canals; [report by J. H. E. Hart, acting chief engineer for irrigation]. pp. 16. map. f°. [Bombay, Govt., 1879.]
- 127 — — Report on the Nira canal project, Poona district. pp. 19+xxxi. f°. [Bombay, Govt., 1892.]
- 128 — — Report on the slips in earthen embankments of tanks at Ekrúk, Ashti, and Waghád in Bombay Presidency; [by J. Le Mesurier]. pp. 5. f°. [Bombay, Govt., 1885.]
- 129 — [*Revenue department*]. Selections from settlement reports of the Sakrand Taluka, irrigational settlement, [Sind]. pp. 20 +[1]. f°. n. p. [1890]. (no. 752 of 1890.) W^G
- Bond, Fred. *See*, as state engineer, 1899–1900, **Wyoming**—*Engineer department.*
- 130 — and Wilson, J. M. Irrigation system of Wyoming. (*In* *U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Irrigation laws of the Northwest Territories of Canada and Wyoming. pp. 47–90. pl. map. 1901.)

- 131 Booth, Robert Bell. Rajkot waterworks, Bombay. (*In* *Instit. civ. eng.* Min. of proc. 119:264-270. 1895.)
- 132 * Borrull, Francisco Xavier. Tratado de la distribucion de las aguas del rio Turio. 1831.
- 133 * Bosc, J. J. Les irrigations en pays de montagne: les barrages-réservoirs dans les Cévennes. pp. 15. Nîmes, Chastanier, 1893.
- 134 Bossut, Charles. Traité théorique et expérimental d'hydrodynamique. New ed. rev. 2 v. pl. 8°. Paris, Laran, l'an 4 de la République [1796]. W^p
- 135 [Boswell, George.] Treatise on watering meadows, wherein are shewn some of the many advantages arising from that mode of practice. particularly on coarse, boggy, or barren lands. Ed. 3 rev. pp. 134. pl. 8°. Lond., J. Debrett, 1792. W^g W^c
- 136 Botella, F. de. Irrigation in the provinces of Murcia and Albacete, Spain: [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 45:311-314. 1876.
Original paper in Supplement to the *Revista de obras públicas*. v. 23.
- 137 Boulé, A. Proposed Nile reservoirs; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 120:388, 389. 1895.)
Original paper in *Génie civil*. 26:49 *et seq.* 1894.
- 138 Boulton, J. W. Artesian boring; report. pp. 17. map. 64 sections of bores. f°. [Sidney. Govt., 1892.] (*N. S. W.—Mines, Dept. of—Water conservation.*) W^A W^g
- 139 Boussinesq, J. Additions et éclaircissements au mémoire intitulé: Essai sur la théorie des eaux courantes. pp. 64. sq. 4°. n. p., [1875]. (Mémoires présentés par divers savants à l'Académie des sciences de l'Institut de France. Savant. Étrang. t. xxiv. no. 2.) W^g
- 140 Bovey, Henry T. Treatise on hydraulics. Ed. 1. pp. 337. il. 8°. N. Y., J. Wiley & sons, 1895. W^g
CONTENTS—Flow through orifices and over weirs.—Fluid friction.—Flow in pipes.—Flow in open channels.—Method of gauging.—Impact.—Hydraulic motors and centrifugal pumps.
- 141 Bowie, Aug. J. Destruction of the English dam. [Sierra county, Cal.]. (*In* *Tech. soc. Pacif. coast. Trans.* 2:3-10. pl. 1885.)
- 142 ——— Measurement and flow of water in ditches. (*In* *Tech. soc. Pacif. coast. Trans.* 1:51-62. il. 1884; 2:171-174. 1885.)
- 143 Bowser, A. E. Hydro mechanics. pp. 298. 12°. N. Y., Van Nostrand, 1886.
- 144 Box, Thomas. Practical hydraulics, a series of rules and tables for the use of engineers, etc. Ed. 5. pp. 80. pl. 12°. Lond., E. & F. N. Spon, 1879. W^p
——— ——— Ed. 9. pp. 80. pl. 12°. Lond., E. & F. N. Spon, 1889. W^g
- 145 Boyd, David. History of Greeley and the Union colony of Colorado. pp. 448. pl. 8°. Greeley, 1890. W^A

Boyd, David—Continued.

- 146 ——— Irrigation near Greeley, Colorado. pp. 90. il. pl. 8°. Wash., Govt., 1897. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 9.) W^A
- (U. S.—*House of Representatives.* 54th Cong. 2d sess. H. doc. 351. In v. 70.) W^A
- 147 [Boyd, Nathan E.] Memorial to Senate of United States in re bill S. 3794 [for equitable distribution of waters of the Rio Grande between United States and Mexico]; history of Rio Grande dam and irrigation company and Elephant Butte dam case, with abstracts from decisions of United States courts relating to use of waters of nonnavigable streams for irrigation purposes. pp. 24. 8°. [Wash., Govt., 1901.] (U. S.—*Senate.* 56th Cong. 2d sess. S. doc. 104. In v. 5.) W^A
Report to accompany S. 3794 is U. S.—*Senate.* 56th Cong. 2d sess. S. rp. 1755. In v. 2.
- 148 Brabant. Note sur la propriété du lit des cours d'eau naturels, fleuves et rivières navigables, flottables ou non et ruisseaux. (*In Ann. des ponts et chaussées: mém. et doc., 1867, [semest. 1].* pp. 148-165.)
- 149 Brady, Joseph. Sandhurst water supply. Victoria. Australia. (*In Instit. civ. eng. Min. of proc.* 56:134-151. il. 1879.)
Discussion on the Geelong and Sandhurst water supplies is given, 56: 152-170.
- Breckons, Joseph A. See, as joint author, Johnston, Clarence T.
- 150 Brica, Charles. Mémoire sur la distribution des eaux des canaux d'irrigation. (*In Ann. des ponts et chaussées: mém. et doc., 1882, semest. 1.* pp. 503-557. pl.)
Résumé des études faites pour la construction des rigoles et la réglementation des arrosages du canal du Verden.
——— ; [abstract entitled] Distribution of water from irrigation canals. (*In Instit. civ. eng. Min. of proc.* 70:445-447. 1882.)
- Brightmore, Arthur William. See, as joint author, Tudsbery, John Henry Tudsbery.
- 151 Brisse, Alexandre, and Rotrou, Léon de. Draining of Lake Fucino accomplished by Prince Alexander Tarlonia, an abridged account, historical and technical; translated by V. de Tivoli, jr. Text & plates [2 v.]. 4° & f°. Rome, 1876. W^G
Accompanied by French text.
- 152 Broadbent, Joseph, and Campin, Francis. Earthwork tables, showing the contents in cubic yards of embankments, cuttings, etc., of heights or depths, up to an average of 80 feet. pp. 54. wide 32°. Lond., Lockwood & co., 1874. W^G
- Brook, Harry Ellington. See International irrigation congress. Irrigation in southern California.
- 153 Brough, Charles Hillman. Irrigation in Utah. pp. 212. 1 pl. 8°. Balt., Johns Hopkins press, 1898. (Johns Hopkins university studies in historical and political science, extra vol. 19.) W^A

CONTENTS—pt. 1. Economic history of irrigation in Utah.—pt. 2. Problems of irrigation in Utah.

- 154 **Brown, Enos.** Crystal Springs dam; [abstract]. (*In Instit. civ. eng. Min. of proc.* 136:388. 1899.)
Original paper in *Scientific American*, 17 Dec. 1898. p. 392.
- 155 * **Brown, John Croumbie.** Hydrology of South Africa and causes of present aridity. 8°. King, 1875.
- 156 ——— Water supply of South Africa and facilities for the storage of it. pp. 651. 8°. Edinburgh, Oliver & Boyd, 1877.
W^A W^G
- 157 **Brown, R. H.** Fayûm and Lake Moëris; with a prefatory note by Colin Scott-Moncrieff. pp. 110. il. pl. Lond., E. Stanford, 1892.
W^P
- 158 * ——— History of the barrage at head of the delta of Egypt; with introductory note by W. E. Garstin. 4°. Cairo, 1896.
- 159 **Browne, J. Ross.** Reclamation of marsh and swamp lands and projected canals for irrigation in California; with notes on the canal systems of China. pp. 60. 8°. San Francisco, 1872.
W^C
Addressed to the legislature of California.
- 160 **Browne, Ross E.** Economic head for long pipes. (*In Tech. soc. Pacif. coast. Trans.* 6:51-56. il. 1889.)
- 161 **Bruce, Alexander Fairlie.** Observations on the flow of water in the new aqueduct from Loch Katrine, Glasgow corporation waterworks. (*In Instit. civ. eng. Min. of proc.* 123:410-414. il. 1896.)
- 162 * **Bruschetti, Giuseppe.** Raccolta delle opere idrauliche e tecnologiche nel Milanese. 2 v. 4°. Torino, Botta, 1864-65.
- 163 ——— Storia dei progetti e delle opere per l'irrigazione del Milanese. pp. 492. sq. 4°. Lugano, G. Ruggia e C., 1834.
W^G
- 164 **Bryas, Charles de.** Études pratiques sur l'art de dessécher, et diverses impressions de voyage. Ed. 3. pp. 376. map. 16°. Paris, V. Masson, 1857.
W^P
CONTENTS.—Théorie du drainage.—Voyage en Angleterre, en Irlande, en Écosse et dans le pays de Galles.—Voyage en Autriche et dans les États allemands.—Exposition de Vienne.—Exposition horticole de Paris.
- 165 ——— Exposé des travaux de drainage et de dessèchement exécutés par M. Ch. de Bryas, dans sa propriété du Taillan. pp. 261. il. map. 24°. Paris, Mallet-Bachelier, 1855.
W^A
- 166 * **Bucchia, G.** Sul progetto d'irrigazione dell'agro Monfalconese; compilato dall'ingegnere R. A. Vicentini. Gorizia, 1868.
- 167 **Buckle, E.** Report on the resources of the districts bordering the Kistna with reference to their irrigation from that river. (*In Reports on various professional subjects, Madras Presidency.* Ed. 2. 2:1-13. 1859.)
Report is dated 24th July, 1839.
- 168 ——— Wulloorpollum sluice; report. (*In Reports on various professional subjects, Madras Presidency.* 1:34-40. pl. 1851.)

- 169 Buckley, Robert Burton. Irrigation works in India and Egypt. pp. 348. il. pl. maps. 4°. Lond., E. & F. N. Spon, 1893. W^A W^G W^P

APPENDICES—Chezy's formula for calculating discharge of open channels.—Bazin's formula for calculating discharge of open channels.—Kutter's formula for calculating discharge of open channels.—Mississippi formula for calculating discharge of rivers.—Discharge of rectangular orifices and overfalls.—General instructions for guidance of officers observing canal discharges.—Rules for distributary designs.—Rules for construction of "minor" distributaries and irrigation outlets.—Sir Guilford Molesworth's formula for high masonry dams.—Formulae for notch falls.—Lateral pressure of earthwork.—Specification of Bhatgarh dam.

- 170 — Irrigation works of India, and their financial results; being a brief history and description of the irrigation works of India, and of the profits and losses which they have caused to the state. pp. 198. map. tables. 8°. Lond., W. H. Allen & co., 1880. W^A W^G

- 171 * — Irrigation works of India; a statistical review of the financial and agricultural results obtained from them in 1887-88. Calcutta, 1889.

— —; [abstracts]. (*In* Instit. civ. eng. Min. of proc. 99:442-444. 1890.)

- 172 — Movable dams in Indian weirs. (*In* Instit. civ. eng. Min. of proc. 60:43-55. pl. 1880.)

Discussion and correspondence upon this paper and the one preceding it, Fixed and movable weirs, by S. F. V. Harcourt, given, 60:56-159.

- 173 — On keeping irrigation canals clear of silt. (*In* Instit. civ. eng. Min. of proc. 58:278-280. 1879.)

Abstract by the author of an original communication on, The proper construction of irrigating channels, etc.

Buffon, B. Nadault de. *See* Nadault de Buffon, B.

- 174 Buffum, B. C. Irrigation and duty of water. pp. 1-31. il. 8°. Laramie, 1892. (*Wyo. exper. sta. Bulletin* 8.) W^A

- 175 — Recent investigations by Wyoming experiment station in alkali and irrigation. (*In* Assoc. of Amer. agricultural colleges and experiment stations. Proc., 1899. pp. 69-71. 1900.)

- 176 — Use of water in irrigation in Wyoming and its relation to ownership and distribution of natural supply. pp. 56. pl. charts. 8°. Wash., Govt., 1900. (*In* U. S.—Agriculture, Dept. of—Experiment stations, Office of. Bulletin 81.) W^A

— *See also* Wyoming experiment station, Alkali.

- 177 Burke, Charles Toler. Ashti tank. (*In* Instit. civ. eng. Min. of proc. 76:288-316. il. pl. 1884.)

- 178 Burma—[*Public works department*]. Notes on subjects connected with works in the Irrawaddy circle, British Burma; with records of experiments on the double float and Woltmann meter current measurements. pp. 63. pl. map. f°. Rangoon, Govt., 1883. W

- 179 — — Report on the Irrawaddy river; by R. Gordon. 3 v. maps. f°. Rangoon, 1879, 1880. W^G
For contents see Gordon, Robert.

- 180 Burn, Robert Scott. Utilization of town sewage, irrigation, reclamation of wasteland. Ed. 5. pp. 215. il. 12°. Lond., Lockwood & co., 1885. (Outlines of modern farming: Weale's ser.) W^G
- 181 * Burton, William Kinninmond. Water supply of towns and the construction of water works; [with] Paper on the effects of earthquakes on waterworks, by J. Milne. pp. 304. il. pl. 8°. Lond., Crosby Lockwood & son, 1894.
- 182 Butler, W. P. Irrigation manual; containing useful information and tables appertaining to irrigation by artesian waters in the states of North and South Dakota, together with many tables, rules, and items of miscellaneous information of value to farmers and business men. pp. 252. il. 12°. Huron, [Shannon & Longstaff], 1892.
- 183 Byrne, Henry. Irrigation in Ceylon. (*In* Instit. civ. eng. Min. of proc. 57:231-238. 1879.)
- 184 Cadart, Gustave. Note sur les calculs de résistance d'une carcasse de porte d'écluse. (*In* Ann. des ponts et chaussées: mém. et doc., 1900, trimest. 3. pp. 267-296.)
- 185 California—Attorney-general. District irrigation laws of California, decisions thereon by the supreme court: compiled by W. H. H. Hart. pp. 75. 8°. Sacramento, State. 1891. W^A W^G
- 186 ——— *Drainage commissioners, State board of*. Proceedings; formation of drainage district no. 1. pp. 24. 8°. Sacramento, State. 1880. W^G
Report of State engineer, W. H. Hall, in the matter of a drainage district for the Sacramento valley is included, pp. 6-24.
- 187 ——— *Engineer department*. Irrigation development, history, customs, laws, and administrative systems relating to irrigation, water-courses, and waters in France, Italy, and Spain, introductory part of report of state engineer of California on irrigation and the irrigation question; [by] Wm. Ham. Hall. pp. 622. 8°. Sacramento, State, 1886. W^A W^G
- 188 ——— ——— Irrigation in California (Southern), the field, water-supply, and works, organization, and operation in San Diego, San Bernardino, and Los Angeles counties, the second part of report of state engineer of California on irrigation and the irrigation question; [by] Wm. Ham. Hall. pp. 672. pl. maps. 8°. Sacramento, State, 1888. W^A W^G
- 189 ——— ——— Irrigation question, memorandum transmitted to the legislature; by Wm. Ham. Hall, state engineer. pp. 18. 8°. Sacramento, State, 1886. W^G
- 190 ——— ——— Memorandum concerning the improvement of the Sacramento river, addressed to James B. Eads and George H. Mendell, consulting engineers; by Wm. Ham. Hall. pp. 11. 8°. Sacramento, State, 1880. W^G

California—*Engineer department*—Continued.

- 191 ——— Physical data and statistics of California, relating to rainfall, temperature, winds, evaporation, and other atmospheric phenomena, drainage areas and basins, flow of streams, descriptions and flow of artesian wells, etc.; [submitted by] W. H. Hall. pp. 547. 8°. Sacramento, State, 1886.
- 192 ——— Report in the matter of a drainage district for the Sacramento valley; by W. H. Hall. (*In Cal.—Drainage commissioners, State board of.* Proceedings; formation of drainage district no. 1. pp. 6–24. 1880.)
- 193 ——— Report to the legislature, 1880; [by W. H. Hall]. 5 pt. chart. 8°. Sacramento, State, 1880. W^G
 CONTENTS—pt. 1. Operations of the department. pp. 27.—pt. 2. Drainage of the valleys and the improvement of the navigation of rivers. pp. 92.—pt. 3. Flow of mining detritus. pp. 72. chart.—pt. 4. Irrigation. pp. 128.—pt. 5. Present condition of the inquiry. pp. 8.
- 194 ——— Report to the legislature, 1881; [by W. H. Hall]. 5 pt. 8°. Sacramento, State, 1881. W^G
 CONTENTS—pt. 1. History of operations of the department. pp. 25.—pt. 2 and 3. Promotion of drainage. pp. 95.—pt. 4. Irrigation. pp. 44.—pt. 5. Financial statement for the year 1880. pp. 45–48.
- 195 ——— Third progress report of state engineer to the legislature, session of 1883; [by W. H. Hall]. pp. 15. 8°. Sacramento, State, 1883. W^G
- 196 ——— Report of the state engineer [W. H. Hall] to governor. pp. 12+38. 8°. Sacramento, State, 1888. W^G
 Contains reprint of the preface, introduction, and table of contents of Hall's *Irrigation in California*; followed by press and individual opinions of his *Irrigation* development.
- 197 ——— Report to the board of directors of drainage district no. 1, July, 1880; by W. H. Hall. pp. 29. 8°. Sacramento, State, 1880. W^G
 CONTENTS—pt. 1. Drainage works for the district.—pt. 2. Dams for impounding mining detritus.
- 198 ——— *Legislature.* Reports of the joint committees on swamp and overflowed lands; presented at the 20th session of the legislature. pp. 354. 8°. Sacramento, State, 1874. W^G
- 199 ——— *Public works department.* Report of the commissioner of public works to the governor of California. pl. 8°. Sacramento, State, 1895.
 A. H. Rose, commissioner. Marsden Manson and C. E. Grunsky, consulting engineers.
- 200 ——— *Rivers and harbors, Examining commission on.* Report of the Examining commission on rivers and harbors to the governor of California. pp. 148. pl. maps. 8°. Sacramento, State, 1890.
 C. E. Reed, C. E. Grunsky, J. J. Crawford, commissioners.
- 201 ——— *Surveyor-general.* Annual report, 1862; [by J. F. Houghton]. 8°. Sacramento, State, 1863. W^G
- 202 California agricultural experiment station. Alkali lands, irrigation and drainage in their mutual relations, second revised reprint from the reports of the College of Agriculture and Experiment station and from the report of the 10th United States Census, with an abstract of the government report on the alkali lands of India; by E. W. Hilgard. pp. 69. 8°. Sacramento, 1892. (Report, 1890. Appendix.) W^A W^P
 For first edition, see *California, University of—College of agriculture.*

California agricultural experiment station—Continued.

- 203 — Conservation of soil moisture and economy in the use of irrigation water: [by E. W. Hilgard and R. H. Loughridge]. pp. 12. il. pl. 8°. Berkeley, 1898. (Bulletin 121.) W^A
- 204 — Distribution of the salts in alkali soils: by E. W. Hilgard and R. H. Loughridge. pp. 14. il. 8°. Berkeley, 1895. (Bulletin 108.) W^A
- 205 — Examination of irrigation waters: [by E. W. Hilgard]. [Berkeley, 1884.] (Bulletin 7.) W^A
Published in the California newspapers.
- 206 — Irrigation, drainage and alkali: [by E. W. Hilgard]. [Berkeley, 1886.] (Bulletin 53.) W^A
Published in the California newspapers.
- 207 — Reports of examinations of waters, water-supply, and related subjects, 1886-89; by E. W. Hilgard. pp. 57. 8°. Sacramento, 1889.
Advanced sheets from the combined reports for 1888 and 1889.
- 208 — Rise of the alkali in the San Joaquin valley; [by E. W. Hilgard]. pp. 4. 8°. Berkeley, [1889]. (Bulletin 83.) W^A
- 209 **California state association of irrigation districts.** Central irrigation district, its physical, engineering, and business problems and conditions; by Wm. Ham. Hall: Its legal status; by Wilson & Wilson. pp. 63. pl. 8°. San Francisco, Bacon & co., 1891. W^A
- 210 — Perris irrigation district, its physical, engineering, and business problems and conditions; by Wm. H. Hall: Its legal status; by Wilson & Wilson. pp. 74. 8°. San Francisco, Bacon & co., 1891. W^A
- 211 **California state irrigation convention.** Address of the State irrigation committee to the Fresno and Riverside irrigation conventions and to the anti-riparian voters. pp. 299. 8°. n. p., 1886. W^G
With opinions of the press.
- 212 — Proceedings of convention held at San Francisco, May 20, 21, and 22, 1886. v. p. 8°. n. p., 1886. W^G
With extracts from the press on irrigation.
- 213 **California, University of—College of agriculture.** Alkali lands, irrigation and drainage in their mutual relations, revised reprint from the reports of the College of agriculture and from the report of the 10th United States Census, with an abstract of the government report on the alkali lands of India; by E. W. Hilgard. pp. 45. 8°. (Report, 1886. Appendix 7.) W^A W^G W^P
For second edition, see **California agricultural experiment station**, Alkali lands, etc.
- — *Agricultural experiment station.* See **California agricultural experiment station.**

- 214 **California water and forest association.** Irrigation investigations in California under direction of Elwood Mead, assisted by William E. Smythe, [and others: preliminary report of cooperative irrigation investigations in California, of Office of Experiment Stations and California water and forest association], pp. 73. 8°. Wash., Govt., 1901. (U. S.—*Senate*. 56th Cong. 2d sess. S. doc. 108. *In v.* 5.) W^A

— —; [complete report, entitled] Report of irrigation investigations in California. pp. 411. il. pl. maps. 8°. Wash., Govt., 1901. (U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Bulletin 100.) W^A

For contents, see **United States—Agriculture, Department of—Experiment stations, Office of**, Report of irrigation investigations in California.

- 215 — Preliminary report by J. B. Lippincott, resident hydrographer, U. S. Geological survey, relating to stream measurements and reservoir surveys made in co-operation with the California water and forest association, 1900. pp. 48. 8°. n. p., [Cal. water and forest assoc., 1900].

To be followed by detailed publication with maps, diagrams, and views.

— —; [revised with additional matter, entitled] Progress report of cooperative investigation by U. S. Geological survey and California water and forest association, 1900. pp. 38. 8°. [Wash., Govt., 1900.] (U. S.—*Senate*. 56th Cong. 2d sess. S. doc. 59. *In v.* 5.) W^A

- 216 **Calmels, Martin.** On the removal of deposit from reservoirs in Algeria; [abstract]. (*In* **Inst. civ. eng.** Min. of proc. 71:441. 1883.)

Original paper in *Comptes rendus de l'Association française pour l'avancement des sciences*.

- 217 — Removal of silt from the back of reservoir dams in Algeria; [abstract]. (*In* **Inst. civ. eng.** Min. of proc. 60:440. 1880.)

Original papers in *Annales industrielles*, 1879, Dec. 21, col. 774, pl.; Dec. 28, col. 806; and 1880, Jan. 4, col. 23; Jan. 18, col. 91.

- 218 **Campbell, D. W., compiler.** Digest of decisions of the supreme courts of the states and territories of the arid region and of the United States circuit and supreme courts in cases involving questions relative to the use and control of water in that region; compiled by D. W. Campbell, revised and edited by W. C. Pollock. pp. 59. 8°. Wash., Govt., 1889. (U. S.—*Interior, Dept. of the*.) W^G W^P

This list has been further revised and enlarged in **Hinton, Richard J.**, Irrigation in the United States. Ed. 2. pp. 329-358. 1890.

Campin, Francis. See also, as joint author. **Broadbent, Joseph.**

- 219 **Canada—Interior, Department of the.** General report on irrigation and Canadian irrigation surveys, 1894-96. pl. maps. 8°. Ottawa, Govt., 1895-98. W^A

- 220 **Canal d'irrigation de Carpentras; prix décernés par la Société d'encouragement.** (*In* **Ann. des ponts et chaussées: mém. et doc.**, 1860, semest. 2. pp. [106]-110.)

- 221 [Canaux d'irrigation.] (*In Ann. des ponts et chaussées: mém. et doc.*, 1866. [semest. 1]. pp. 21-24; 1867. [semest. 1]. pp. 28-32; 1868. semest. 1. p. 16; 1869. semest. 1. pp. 120, 121.)
 Extrait d'Exposé de la situation de l'empire: présenté au sénat et au corps législatif. *Moniteur*, des 24 et 25 janvier 1866, du 17 février et du 23 novembre 1867; *Jour. off. de l'Empire français* des 21 janvier 1869 et jours suivants.
- 222 * Cannon, George Q. Mormon land system. Denver, 1894.
- 223 Cape of Good Hope—*Lands, mines, and agriculture. Department of.* Report of [Thomas Bain,] geological and irrigation surveyor, 1892. pp. 20. maps. f°. Cape Town, Govt., 1893. W^A
- 224 ——— Report on Calitzdorp irrigation scheme (in the division of Oudsthoorn); by Thomas Bain. pp. 7. maps 3. f°. Cape Town, Govt., 1893. W^A
- 225 ——— [*Public works department.*] Douglas irrigation works on Vaal river, Griqualand West. description of scheme and information regarding the whole works as completed to December, 1898; by William Craig. pp. 13. pl. 13. chart. f°. Cape Town, Govt., 1899. W^A W^G
- 226 ——— Hartz river valley irrigation scheme; reports of H. C. Litchfield, engineer-in-charge, and covering letters by the chief inspector. pp. 53. map. f°. Cape Town, Govt., 1899. W^A W^G
- 227 ——— Report of the representatives of the government of the Colony of the Cape of Good Hope, appointed to confer with representatives of the Orange Free State on the question of the utilisation of the waters of the Orange river. pp. 32. f°. Cape Town, Govt., 1899. W^G
- 228 ——— Report of the Thebus irrigation commission, 1899; with minutes of proceedings, minutes of evidence, correspondence and exhibits. pp. 68. pl. map. f°. Cape Town, Govt., 1899. W^A W^G
- 229 Capito, Michele. Underground water courses and the means of utilizing them: [abstract]. (*In Instit. civ. eng. Min of proc.* 81: 381-384. 1885.)
 Original paper in *Giornale del genio civile*, 1884. p. 589.
- 230 Carpenter, L. G. [Artesian basins, wells, springs, and other supplies of eastern Colorado.] (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigations, etc. pp. 173-232. map. 1890.)
- 231 ——— [Artesian basins, wells, springs, and other supplies of New Mexico.] (*In Same.* pp. 233-241. 1890.)
- 232 ——— Artesian wells of Colorado and their relation to irrigation. pp. 28. map. 8°. Fort Collins, 1891. (*Colo. agric. exper. sta. Bulletin* 16.) W^A
- 233 ——— Irrigation statistics and progress in Colorado for 1890. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Report on progress of irrigation investigation. pt. 1. pp. 181-197. 1891.) W^A
- 234 ——— Loss of water from reservoirs by seepage and evaporation. pp. 32. 8°. Fort Collins, 1898. (*Colo. agric. exper. sta. Bulletin* 45.)

Carpenter, L. G.—Continued.

- 235 ——— Losses from canals from filtration or seepage. pp. 36. 8°. Fort Collins, 1898. (Colo. agric. exper. sta. Bulletin 48.) W^A
- 236 ——— Measurement and division of water. Ed. 2. pp. 45. 8°. Fort Collins, 1890. (Colo. agric. exper. sta. Bulletin 13.)
- Ed. 3, rev. pp. 42. il. 8°. Fort Collins, 1894. (Colo. agric. exper. sta. Bulletin 27.) W^A
- 237 ——— Preliminary report on the duty of water. pp. 32. il. Fort Collins, State, 1893. (Colo. agric. exper. sta. Bulletin 22.)
- 238 ——— Problem of irrigation in western states. (*In Assoc. of Amer. agricultural colleges and experiment stations.* Proc., 1899. pp. 75, 76. 1900.)
- 239 ——— Seepage or return waters from irrigation. pp. 63. il. map. 8°. Fort Collins, 1896. (Colo. agric. exper. sta. Bulletin 33.)
- 240 Carpenter, Samuel Warner. Law of water for irrigation in Colorado. pp. 127. 16°. Denver, Lawrence & co., 1886. W^G
- * ———; supplement containing all the legislation adopted by the Colorado general assembly, 1887, and additional decisions to May 15, 1887. 12°. Denver, Lawrence & co., 1887.
- 241 Carrie, J. C. Lake Oredon dam, [France; abstract]. (*In Instit. civ. eng. Min. of proc.* 66:402–404. 1881.)
- Original paper in *Mémoires de la Soc. des ingénieurs civils*, Paris, 1881. p. 491.
- 242 *Carton, Oreste, and Marcolongo, Ettore. Manuale dell'ingegnere agronomo e del agricoltore. Ed. 2. pp. 652. Firenze, 1888.
- 243 Castel, —. Expériences faites au Château-d'Eau de Toulouse sur l'écoulement de l'eau par les déversoirs. (*In Ann. des ponts et chaussées: mém. et doc.*, 1837, semest. 1. pp. 113–132.)
- 244 ——— Sur l'écoulement de l'eau par des ajutages coniques convergents. (*In Ann. des ponts et chaussées: mém. et doc.*, 1840, semest. 2. pp. 179–191. il.)
- Extrait des *Annales des mines*.
- 245 *Castelli, Benedetto. Della misura dell'acque corrente. [Ed. 2?] pp. 72. Roma, 1639.
- 246 Castigliano, Alberto. Intorno ai muri di sostegno delle acque. pp. 17. pl. 4°. Milano, Premiata tipo-litografia degli Ingegneri, 1884. W^G
- Estratto dal *Politecnico*, giornale dell'Ing. arch. civ. ed industr., vol. 32.
- 247 Cautley, Proby Thomas. Ganges canal; a disquisition on the heads of the Ganges and Jumna canals, North-Western Provinces, in reply to strictures by Maj.-Gen. Sir Arthur Cotton. pp. 104. maps. 8°. Lond., 1864. W^G
- Printed for private circulation.
- 248 ——— Report on the Ganges canal works, from their commencement until the opening of the canal in 1854. 3 v. & plans. v. 1–2 8°, v. 3 4°, plans f°. il. pl. maps. Lond., Smith, Elder & co., 1860. W^G

CONTENTS.—v. 1. (pt. 1.) Historical sketch of the origin and progress of the Ganges canal works; v. 1. (pt. 2.) Topography of the country and description of the works.—v. 2. (pt. 3.) Description of the works and details of construction.—v. 3. Appendices.—[v. 4.] Plans.

——— See also, as joint author, Cotton, Arthur Thomas.

- 249 Ceredi, Giuseppe. Tre discorsi sopra il modo d'alzar acque da luoghi bassi: per adacquare terreni: per levar l'acque sorgenti, e piovute dalle campagne che non possono naturalmente dare loro il decorso: per mandare l'acqua da bere alle città che n'hanno bisogno e per altri simili usi. pp. 100. 8°. il. pl. Parma, Seth Viotti, 1567. W^P
- 250 Ceylon—[*Irrigation department*]. General report on irrigation in the Mannar district: [by Henry Parker, irrigation officer]. pp. 8. f°. n. p., Govt., 1880. ([Sessional papers, 1880.] 48. pp. 543-548.) W^G
- 251 — — Irrigation in the Mannar district: reports upon the Akatti Murippu tank and Modaragamoya works; by Henry Parker, irrigation officer. pp. 13. f°. Colombo, Govt., 1881. ([Sessional papers, 1881.] 1. pp. 3-13.) W^G
- 252 — — Irrigation in the Northern Province; [reports] by Henry Parker, irrigation officer. [6 reports.] f°. Colombo, Govt., 1886. 1887. (Sessional papers, 1886.) W^G
CONTENTS—Reports on certain valleys in the Mullaittivu, Vilāṅkūlam and Vavūṇiyan-Vilāṅkūlam districts.
- 253 Chamberlin, Thomas C. Requisite and qualifying conditions of artesian wells. (*In U. S.—Interior, Dept. of the—Geological survey.* 5th annual report, 1883-84. pp. 125-173. 1885.) W^A
 — —; [separate]. 4°.
- 254 Chambrelent. Des travaux d'ensemble à faire immédiatement et des mesures à prendre pour l'assainissement et la mise en valeur des Landes de Gascogne. (*In Ann. des ponts et chaussées: mém. et doc.*, 1858, semest. 2. pp. 349-366.)
- 255 — Les irrigations agricoles faites en France de 1866 à 1886. pp. 21. 4°. Paris, Gauthier-Villars et fils. 1888. W^G
- 256 * — Les landes de Gascogne, leur assainissement, leur mise en culture, exploitation et débouchés de leurs produits. pp. 118. pl. Paris, 1887.
- 257 — Mémoire sur l'assainissement et la mise en valeur des Landes de Gascogne. (*In Ann. des ponts et chaussées: mém. et doc.*, 1878, semest. 2. pp. 157-239. pl.)
Article based on this mémoire by G. Wilson, in *Instit. civ. eng.*, Min. of proc. 55:234-240. 1879.
- 258 — Rapport sur l'assainissement et la mise en valeur des Landes. (*In Ann. des ponts et chaussées: mém. et doc.*, 1856, semest. 2. pp. 356-372.)
- 259 Championnière, Paul Lucas. De la propriété des eaux courantes, du droit des riverains, et de la valeur actuelle des concessions féodales. pp. 792. 8°. Paris, Ch. Hingray, 1846. W^G
- 260 Chandler, Albert E. Water storage on Cache creek, California. pp. 48. il. pl. maps. 8°. Wash., Govt., 1901. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 45.) W^A
 — — (*U. S.—House of Representatives.* 56th Cong. 2d sess. H. doc. 488. In v. 63.) W^A
- Channel, C. B. *See also*, as state engineer, 1899-1900, **Nebraska—Irrigation**, *State board of*, Biennial report.

- 261 * **Charpentier de Cossigny, J.** *Hydraulique agricole: aménagement des eaux, irrigation des terres labourables, etc.* Paris, Société des agriculteurs de France, 1874.

* ——— Ed. 2. pp. 400. 8°. Paris, Baudry & cie., 1889. (Encycl. des travaux publics.)

Chapters on water, its management, climate, intermittent irrigation and that of plants usually cultivated, translated by Mrs. A. F. Wood, are given in U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*, Final report. pt. i. pp. 349-368.

- 262 ——— *Notions élémentaires théoriques et pratiques sur les irrigations; appliquées aux terres en culture, aux jardins et aux prairies, et considérées plus spécialement dans leurs rapports avec les divers climats de la France.* pp. 637. il. 8°. Paris, Société des agriculteurs de France, 1874. W^G

Awarded the gold medal and 2,000 francs by the Société des agriculteurs de France.

The first chapter of this work may be found translated in *Victoria—Royal commission on water supply*, Fourth progress report; irrigation in Egypt and Italy. Appendix 1. pp. 47-53. 1887. A reprint of which, slightly abridged and adapted, is given in U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*, Report on progress of irrigation investigation. pt. i. pp. 268-278. 1891.

- 263 **Chauveau des Roches, A., Belin, E., and others.** *Hydraulique appliquée: des divers appareils servant à élever l'eau pour alimentations, irrigations, épuisements, utilisation et description des moteurs hydrauliques.* Text & plates [2 v.]. il. 8° & sq. 8°. Paris, E. Lacroix, [1873]. W^P

Formé de la réunion d'articles publiés dans les *Annales du génie civil*.

- 264 **Chesbrough, E. S., and Durant, C. F.** *Letters on hydraulics; a correspondence . . . on the physical laws that govern running water applied to a dam and mill privilege on the Housatonic river at Great Barrington, Mass.* pp. 91. il. chart. 8°. N. Y., 1849. W^P

Cheyenne, Wyo. See, for irrigation congress held here in 1898, *National irrigation congress*, Official report.

Chicago, Ill. See, for irrigation congress held here in 1900, *National irrigation congress*, Official report.

Chilcott, E. C. See, as agriculturist, *South Dakota experiment station—Chemistry and agriculture, Departments of.*

- 265 **Chiru, Constantin.** *Canalisarea riurilor și irigațiunei.* pp. 319. il. pl. 19. map. 8°. Bucuresci, 1893. W^C

- 266 **Chittenden, Hiram M.** *Preliminary examination of reservoir sites in Wyoming and Colorado; report.* pp. 110. pl. map. charts. 8°. Wash., Govt., 1898. (U. S.—*War. dept.—Engineer dept.* 55th Cong. 2d sess. H. doc. 141. In v. 38.) W^A W^G

Includes Monograph upon reservoirs and their effects on floods of Mississippi system; by J. A. Seddon.

——— (In U. S.—*War dept.—Engineer dept.* Report, 1898. pt. 4. pp. 2815-2922. pl. map. 1898.)

———; [separate]. 8°.

- 267 ——— *Reservoir system of the Great Lakes of the St. Lawrence basin, by Chittenden, with a Mathematical analysis of the influence of reservoirs upon stream flow, by James A. Seddon.* (In *Amer. soc. civ. eng. Proc.* 24:526-598. il. chart. 1898; with discussion. *Trans.* 40:355-448. il. chart. 1898.)

- 268 Chittenden, Samuel H. Description of the work of constructing a dam across the Potomac river for increasing the water supply of Washington, D. C. (*In Amer. soc. civ. eng. Trans.* 18:50-58. pl. 1888.)
- 269 Church, Benjamin S. Notes and suggestions on the Croton water works and supply for the future. (*In Amer. soc. civ. eng. Trans.* 5:107-114. il. 1876.)
Discussion on this subject is given, 5:254-275.
— See also **New York aqueduct commission.**
- 270 Church, Irving Porter. Fluids: a treatise on hydraulics and pneumatics. pp. 515-832. 8°. N. Y., J. Wiley & sons, 1889. (Mechanics of engineering. pt. 4.) W^P
* — — — Ed. 2. 8°. N. Y., 1890.
- 271 * Cipolletti, Cesare. Canale Villoresi: modulo per la dispensa delle acque; esperimenti e formole per grande stramazzi a soglia inclinati ed orizzontale. pp. 101. 8°. Milano, 1886.
This subject is further treated of in *Colo. agric. exper. sta.*, Bulletin 13. 1890.
— — —: [abstract]. (*In Instit. civ. eng. Min. of proc.* 85:450-453. 1886.)
- 272 — — — Weir with free overfall and constant coefficient of contraction for gauging water supplied for irrigation; [abstract]. (*In Instit. civ. eng. Min. of proc.* 85:454-457. 1886.)
Original article in *Giornale del genio civile*, 1886. p. 24.
Clark, D. Kinnear. See, as editor, **Dempsey, G. Drysdale.**
- 273 Clerke, William John Bird. Tansa works for the water supply of Bombay. (*In Instit. civ. eng. Min. of proc.* 115:12-42. 1894.)
Discussion and correspondence on impounding reservoirs are given in 115:82-188.
Note on the flood-discharge of the Tansa catchment-area, by Clerke, is given in 119:280.
- Cochard, Achille. See, as translator, **Dünkelberg, Friedrich Wilhelm.**
- 274 Code, W. H. Use of water in irrigation in Arizona. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 111-130. pl. 1900.)
— — — (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water for irrigation in Texas. pp. 111-130. pl. 1901.)
- 275 Coffin, Frederick F. B. [Artesian wells of South Dakota east of the Missouri and north of 44° 13' of north latitude.] (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 125-140. 1890.)
- 276 — — — Special report on certain artesian conditions existing in South Dakota. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 4. pp. 51-61. charts. 1892.)
— — — See also, as state engineer, **South Dakota—Irrigation, State engineer of.**

- 277 Coffin, Freeman C. Graphical solution of hydraulic problems, treating of the flow of water through pipes, in channels and sewers, over weirs, etc. pp. 79. diagrams 34. 12°. N. Y., John Wiley & sons, 1901. W^A
- 278 Coghlan, Timothy Augustine. Discharge of streams in relation to rainfall. New South Wales. (*In* Instit. civ. eng. Min. of proc. 75:176-194. 1884.)
- 279 Cole, Asahel N. New agriculture, or the waters led captive. pp. 223. pl. 8°. N. Y., American angler, 1885. W^A W^G
- 280 Cole, Asher P. Cole's combined system of drainage and irrigation, a new system of agriculture originated by A. N. Cole. pp. 103. il. 8°. n. p., [1889]. W^A W^G W^C
- Collingwood, Charles B. *See*, as joint author, Gulley, Frank A.
- 281 Colorado—*Commission to revise laws of the state*. Report of commission appointed by the governor to revise the laws of the state regulating the appropriation, distribution, and use of water, with the draft of a bill prepared by the commission for enactment by the general assembly. pp. 300. 8°. Denver, State, 1890. W^A W^G
COMMISSIONERS—E. T. Wells.—T. C. Henry.—J. S. Greene.
- 282 ——— *Engineer department*. Biennial report, 1881-1900. pl. maps. 8°. Denver, State, 1882-1901. W^A W^G
[1st] Biennial report, 1881-82; by E. K. Stimson.—Report for 1883-84 [2d]; by E. S. Nettleton.—3d Biennial report, 1885-86; by Nettleton.—4th Biennial report, 1887-88; by J. S. Greene. 2 pt.—Same. Ed. 2.—5th Biennial report, 1889-90; by J. P. Maxwell. 2 pt.—6th Biennial report, 1891-92; by J. P. Maxwell.—7th Biennial report, 1893-94; by C. B. Cramer. 2 pt. maps.—Maps of this report, separate. 1894.—8th Biennial report, 1895-96; by H. A. Sumner. 1897.—9th Biennial report, 1897-98; by J. E. Field. 1899.—10th Biennial report, 1899-1900; by A. J. McCune. 1901.
- 283 ——— ——— Irrigation laws and instructions to superintendents and water commissioners; [compiled by Charles B. Cramer]. pp. 197. 8°. Denver, State, 1893. W^G
——— ——— ——— pp. 228. 8°. Denver, State, 1894. W^A W^C
- 284 ——— ——— Measurement of water; by A. L. Fellows. pp. 61. il. 8°. Denver, State, 1900. (*Irrigation bulletin* 1.)
- 285 Colorado agricultural experiment station. Artesian wells of Colorado and their relation to irrigation; [by L. G. Carpenter]. pp. 28. map. 8°. Fort Collins, 1891. (*Bulletin* 16.) W^A
- 286 ——— Loss of water from reservoirs by seepage and evaporation; by L. G. Carpenter. pp. 32. 8°. Fort Collins, 1898. (*Bulletin* 45.) W^A
- 287 ——— Losses from canals from filtration or seepage; [by L. G. Carpenter]. pp. 36. 8°. Fort Collins, 1898. (*Bulletin* 48.) W^A
- 288 ——— Measurement and division of water; [by L. G. Carpenter]. ed. 2. pp. 45. 8°. Fort Collins, 1890. (*Bulletin* 13.) W^A
——— ——— Ed. 3, rev. pp. 42. il. Fort Collins, 1894. (*Bulletin* 27.) W^A
- 289 ——— Preliminary report on the duty of water; by L. G. Carpenter. pp. 32. il. Fort Collins, 1893. (*Bulletin* 22.) W^A

Colorado agricultural experiment station—Continued.

- 290 — Report of experimental work in the department of physics and engineering. [irrigation and meteorology; by Elwood Mead]. pp. 12. il. 8°. Fort Collins, 1887. (Bulletin 1.) W^A
- 291 — Seepage or return waters from irrigation: [by L. G. Carpenter]. pp. 63. il. map. 8°. Fort Collins, 1896. (Bulletin 33.) W^A
- 292 — Soils and alkali, fertility, irrigation, etc.; [by D. O'Brine]. pp. 27. 8°. (Bulletin 9.) W^A
- 293 — *Irrigation engineer*. Report. (*In Colo. agric. exp. sta.* 13th Report, 1900. pp. 132-140. 1901.) W^A
For earlier reports, see Colorado agricultural experiment station—*Meteorology and irrigation, Section of.*
- 294 — *Meteorology and irrigation, Section of*. Annual report, 1888-1899. (*In Colo. agric. exp. sta.* 1st Report, 1888. pp. 153-155; 2d Report, 1889. pp. 47-76; 3d Report, 1890. pp. 57-155; 4th Report, 1891. pp. 29-97; 5th Report, 1892. pp. 20-33; 6th Report, 1893. pp. 44-50; 7th Report, 1894. pp. 52-57; 8th Report, 1895. pp. 103-114; 9th Report, 1896. pp. 149-153; 10th Report, 1897. pp. 62-85. il.; 11th Report, 1898. pp. 171-201. chart; 12th Report, 1899. pp. 42-51. pl.)
Report, 1890, contains list of irrigation literature, pp. 78-89.
For report, 1900, see Colorado agricultural experiment station—*Irrigation engineer*.

Columbia irrigation company. See **United States**.—*House of Representatives—Indian affairs, Committee on*, Right of way through Yakima Indian reservation.

- 295 Comoy. Quelques renseignements sur le Pô et les autres fleuves du nord de l'Italie. (*In Ann. des ponts et chaussées: mém. et doc.*, 1860, semest. 2. pp. 257-304. pl.)

Conant, Carlos. See **Mexico**—*Public works department*, Concession.

- 296 Conley, J. D. Artesian wells of southern Wyoming, their history and relation to irrigation. pp. 87-122. 8°. Laramie, 1894. (*Wyo. exper. sta.* Bulletin 20.) W^A

- 297 Connell, J. H., and McHenry, S. A. Report from Beeville station; soils, climate, water supply, irrigation equipment. pp. 927-958. il. pl. 8°. Austin, 1898. (*Tex. agric. exper. sta.* Bulletin 43.) W^A

- 298 Conte. Notice sur les irrigations dans l'arrondissement d'Avignon. (*In Ann. des ponts et chaussées: mém. et doc.*, 1850, semest. 2. pp. 337-382. pl.)

Corbett, F. V. See **North West Provinces and Oudh**—*Public works department—Irrigation branch*. Irrigation revenue report of the North-Western Provinces for the year ending 31st March, 1893.

- 299 Cortese, Emilio. Progetto di massima di un serbatoio sul fiume Ofanto: relazione. (*In Italy—Commissione idraulica*. Irrigazione delle Puglie. [1886.]) W^G

Cossigny, J. Charpentier de. See Charpentier de Cossigny, J.

- 300 **Cotton, Arthur Thomas.** Reports on irrigation of the delta of the Godavery, in Rajahmundry and Masulipatam districts. pp. 226. pl. f°. [Madras, 1854.] (**Reports** on various professional subjects, Madras Presidency. vol. 3. 1854.)
- 301 * ——— Results of irrigation works in Godaveri district. Lond., 1866.
- 302 * ——— and **Cautley, P. T.** Ganges canal: a discussion regarding its projection and present state, and the measures required to make it reliably useful and profitable. 8°. Lond., 1864.
- 303 ——— and **Ross, A.** [Reports and letters upon rivers Cauvery and Colleroon in connection with the construction of upper and lower annicuts; together with statement of results extracted from Fort Saint George gazette.] (*In Reports* on various professional subjects, Madras Presidency. 1:62-91. pl. 1851.)
- 304 **Cotton, H. C.** Colleroon annicuts. (*In Madras Presidency—Public works department.* Colleroon annicuts: reports. 1859.)
- 305 **Courtney, Charles Frederick.** Masonry dams from inception to completion; including numerous formulæ, forms of specification and tender, pocket diagram of forces, etc. pp. 140. diagram in cover pocket. 8°. Lond., Lockwood & son, 1897. W^G
- 306 **Coventry, Walter Buckeley.** Note on the stresses in masonry dams. (*In Instit. civ. eng.* Min. of proc. 116:334-339. 1894.)
- 307 **Cowgill, Elias Branson.** Irrigation practice on the Great plains. pp. 39. il. pl. 8°. Wash., Govt., 1897. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 5.) W^A
- (U. S.—*House of Representatives.* 54th Cong., 2d sess. H. doc. 345. In v. 70.) W^A
- 308 **Cox, Walter Gibbons.** Artesian wells as a means of water supply, including an account of the rise, progress, and present state of the art of boring for water in Europe, Asia, and America, progress in the Australian colonies, treatise on the water-bearing rocks, machinery for and the cost of boring, treatise on irrigation from artesian wells, and on sub-artesian or shallow boring, etc. pp. 146. il. pl. 8°. Brisbane. Sapsford & co., 1895. W^G
- 309 **Craig, James.** Maximum flood-discharge from catchment areas with special reference to India. (*In Instit. civ. eng.* Min. of proc. 80:201-212. il. 1885.)
- 310 ——— Mean coefficient of discharge from catchment areas. (*In Instit. civ. eng.* Min. of proc. 80:213-220. 1885.)
- 311 * **Craig, Thomas.** Theory of fluid motion. N. Y., Van Nostrand, 1879.
- 312 **Craig, William.** Douglas irrigation works on Vaal river, Griqualand West; description of scheme and information regarding the whole works as completed to December, 1898, with plans and photographs. pp. 13. pl. 13. chart. f°. Cape Town, Govt., 1899. (*Cape of Good Hope—Public works dept.*) W^A

Cramer, C. B. *See*, as state engineer, 1893-94. Colorado—*Engineer department*.

- 313 Crépin, A. Étude sur le dessèchement des pays watringués du nord de la France pour l'écoulement des eaux nuisibles à la mer. (*In Ann. des ponts et chaussées: mém. et doc.*, 1881, semest. 1. pp. 137-196. pl.)

— —: [abstract entitled] Drainage of marsh lands in the north of France. (*In Instit. civ. eng. Min. of proc.* 64:364, 365. 1881.)

- 314 Critchett, O. A. Abstract of the laws of the several states and territories on irrigation and water rights. pp. 180. 8°. Wash., Govt., 1893. (U. S.—*Agriculture, Dept. of—Irrigation inquiry, Office of.* Bulletin 1.) W^A

- 315 Croes, James R. Flow of the west branch of the Croton river. (*In Amer. soc. civ. eng. Trans.* 3:76-86. pl. 1875.)
Discussion on this subject is given in 4:297-309.

- 316 ——— Memoir of the construction of a masonry dam. (*In Amer. soc. civ. eng. Trans.* 3:337-367. pl. 1875.)

——— *See also* New York aqueduct commission.

- 317 Cross, P. de. Régime des eaux. (*In his Code rural.* Ed. 2. 2:117-370. 1888.) W^G

CONTENTS—De la propriété et de l'usage des eaux.—Des usines.—Des curages, élargissements et redressements des cours d'eau.—Des travaux de défense contre l'action des eaux.—Des cours d'eau navigables et flottables.—Loi sur la pêche.—Des eaux utiles (loi des irrigations, 1845, 1847).—Des eaux stagnantes.

Cross, Whitman. *See*, as joint author, Emmons, Samuel Franklin.

- 318 Crowell, J. Foster. Characteristics of the Ravine du Sud, in the island of Hayti, and plan for averting its overflow. (*In Amer. soc. civ. eng. Trans.* 24:470-491. pl. map. 1891.)
Paging includes discussion on the subject.

- 319 Crugnola, Gaetano. Bursting of the Habra dam in the province of Oran, Algeria: [abstract]. (*In Instit. civ. eng. Min. of proc.* 70:447, 448. 1882.)

Original paper in *Ingegneria civile e le arti industriali.* 3:49. 1882.

- 320 ——— Sui muri di sostegno delle terre e sulle traverse dei serbatoi d'acqua. Text & plates [2 v.]. 8°. Torino, A. F. Negro, [1883]. W^G

Cuénod, Émile. *See*, as translator, Salis, Adolphe de.

- 321 *Culcheth, W. W. Irrigation in India, its lessons for Australia. 8°. Melbourne, 1891.

———; [abstract]. (*In Instit. civ. eng. Min. of proc.* 108:437-440. 1892.)

- 322 ——— Quantity of water consumed in irrigation: [abstract]. (*In Instit. civ. eng. Min. of proc.* 69:440, 441. 1882.)

Original paper in *Royal society of Victoria. Proc.*, 26 April, 1882.

- 323 ——— Three papers on Australian irrigation; description. (*In Instit. civ. eng. Min. of proc.* 108:435-437. 1892.)

First paper was read before the *Victorian institute of surveyors*, April, 1885; second paper, before the same institute a year later; third paper, in 1890, at the Melbourne meeting of the *Australian association for the advancement of science*.

Culcheth, W. W.—Continued.

— See also **Victoria**—*Water-supply department*, Cohuna irrigation trust.

324 Culver, Garry E. [Dakotas' artesian basins and their geology.] (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 55–60. il. pl. 1890.)

325 — Report for South Dakota. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 3. pp. 191–209. il. map. pl. 1892.)

326 Cunningham, Allen. Hydraulic experiments at Roorkee; [abstract]. (*In Instit. civ. eng. Min. of proc.* 44:263–266. 1876.)
Report in *Professional papers on Indian engineering.* 2d ser. 4: 1–111.

— —; [abstract]. (*In Instit. civ. eng. Min. of proc.* 48: 322. 1877.)

Ad interim report in *Professional papers on Indian engineering.* 2d ser. vol. 6.

327 — Recent hydraulic experiments. (*In Instit. civ. eng. Min. of proc.* 71:1–94. il. 1883.)

This paper gives a short general account of some extensive experiments on the flow of water in the Ganges canal, a detailed account of which was given in the author's report, Roorkee hydraulic experiments.

The paging given here embraces the discussion on the paper before the society and the correspondence.

328 * — Roorkee hydraulic experiments. Text, tables, & plates 3 v. 8°. Roorkee, Thomason College, 1880–81.

— —; [abstract]. (*In Instit. civ. eng. Min. of proc.* 66: 398–400. 1881.)

— —; [abstract in French entitled] *Compte rendu des expériences hydrauliques faites à Roorkee; par M. Flamant.* (*In Ann. des ponts et chaussées: mém. et doc.*, 1882, semest. 2. pp. 43–96.)

329 Curetur, Stephen. Tillage and products of the soil on irrigated lands. (*In Victoria—Roy. comm. on water supply.* Fourth progress report; irrigation in Egypt and Italy. Appendix 2. pp. 54–58. 1887.) W^G

— —; [extract]. (*In U. S.—Agriculture, Dept. of—Artesian underflow and irrigation investigation.* Report on progress of irrigation investigation. pt. 1. pp. 282–286. 1891.) W^A W^G

330 Curran, J. Milne. Notes on the geology and water supply of the interior of New South Wales. (*In N. S. W.—Roy. comm. conservation of water.* First report. Appendix Z. p. 64. 1885.) W^A

331 Cutter, W. P. Value of natural waters for crop growth. (*In Utah agric. college exper. sta. Bulletin* 22. pp. 8–12. 1893.) W^A

332 Czarlinski, V. Report on the district between the Lachlan, Bogan, and Darling rivers. (*In N. S. W.—Roy. comm. conservation of water.* Third and final report. Appendix. pp. 17–27. 1887.) W^A

- 333 * **Dacosta, J.** Facts and fallacies regarding irrigation and famine in India. 8°. W. H. Allen, 1880.
- Dahlstrom, Karl P.** See, as translator. **Weisbach, Ludwig Julius.**
- 334 * **Dalgas, E.** Engvanding i de jydskede heder. pp. 32. Aarhus, 1866.
- 335 * **Darcy, Henri Philibert Gaspard.** Recherches expérimentales relatives au mouvement de l'eau dans les tuyaux. Paris, 1857. (Acad. des sciences, Paris. Mém. par divers savants. v. 15.)
- 336 * — *and* **Bazin, H.** Recherches hydrauliques. 2 v. & atlas [2 v.]. 4° & f°. Paris, Dunod, 1865.
- CONTENTS—pt. 1. Recherches expérimentales sur l'écoulement de l'eau dans les canaux découverts.—pt. 2. Expériences sur les courants à régime uniforme.—pt. 3. Expériences sur la distribution des vitesses dans les courants.—pt. 4. Expériences sur le mouvement varié.
- 337 **Darley, C. W.** Notes on drilling and boring artesian wells as practiced in the United States of America. (In **N. S. W.—Roy. comm. conservation of water.** First report. Appendix J1. pp. 33-38. pl. 10. 1885.)
- 338 **Darton, Nelson Horatio.** Artesian well prospects in Atlantic coastal plain region. pp. 232. il. pl. maps. 8°. Wash., Govt., 1896. (**U. S.—Interior, Dept. of the—Geological survey.** Bulletin 138.)
- — (**U. S.—House of Representatives.** 54th Cong. 2d sess. H. doc. 28. In v. 35.) W^A
- 339 — New developments in well boring and irrigation in eastern South Dakota, 1896. (In **U. S.—Interior, Dept. of the—Geological survey.** 18th annual report, 1896/97. pt. 4. pp. 561-615. il. pl. maps. 1897.) W^A
- —; [separate]. 4°.
- 340 — Preliminary report on artesian waters of a portion of the Dakotas. (In **U. S.—Interior, Dept. of the—Geological survey.** 17th annual report, 1895/96. pt. 2. pp. 603-694. il. pl. maps. 1896.) W^A
- — pp. 92. il. pl. maps. 4°. Wash., Govt., 1896.
- 341 — Preliminary report on the geology and water resources of Nebraska west of 103d meridian. (In **U. S.—Interior, Dept. of the—Geological survey.** 19th annual report, 1897/98. pt. 4. pp. 719-785. pl. maps. 1899.) W^A
- —; [separate]. 4°. Wash., Govt., 1899.
- 342 — Statement [on artesian water conditions; before Committee on irrigation of arid lands]. (In **U. S.—House of Representatives—Irrigation of arid lands, Committee on.** Hearings. pp. 37-42. 1901.)
- —; [before Committee on public lands]. (In **U. S.—House of Representatives—Public lands, Committee on.** Hearings. pp. 77-82. il. pl. 1901.)

Darton, Nelson Horatio—Continued.

- 343 ——— Underground waters of a portion of southeastern Nebraska. pp. 56. il. pl. maps. 8°. Wash., Govt., 1898. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 12.) W^A

——— (U. S.—*House of Representatives.* 55th Cong. 2d sess. H. doc. 453. In v. 60.) W^A

- 344 * Dassel, H. Beitrag zum bewässerungsproject der Wietze niederrung. Celle, 1861.

- 345 David, T. W. Edgeworth. Artesian water in New South Wales. (In Roy. soc. N. S. W. Jour. and proc., 1891. 25:286–296. [1892.])

- 346 ——— Artesian water in New South Wales and Queensland. pt. 2. (In Roy. soc. N. S. W. Jour. and proc., 1893. 27:408–443. [1894.])

- 347 Davidson, George. Irrigation and reclamation of land for agricultural purposes, as now practiced in India, Egypt, Italy, etc., 1875. pp. 73. pl. maps. 8°. [Wash., Govt., 1876.] (U. S.—*Treasury dept.—Coast survey office.*) W^A

———; [transmitted] in answer to Senate resolution, May 19, 1876. (U. S.—*Senate.* 44th Cong. 1st sess.: Sen. ex. doc. 94. 1876.) W^A W^G

——— See also, as joint author, Alexander, B. S.

- 348 Daviel, A. Commentaire de la loi du 29 avril 1845 sur les irrigations. pp. 50. 8°. Paris, C. Hingray, 1845. W^G
Appendice à la 3^e édition du Traité des cours d'eau. 1845.

- 349 ——— Traité de la législation et de la pratique des cours d'eau. Ed. 3, rev. and enl. 3 v. 8°. Paris, C. Hingray, 1845. W^G

- 350 Davis, Arthur Powell. Elevation and stadia tables for obtaining differences of altitude for all angles and distances, horizontal distances in stadia work, etc., with all necessary corrections, together with hydraulic tables giving velocities for various channels and slopes. Ed. 1. pp. 42+[1]. nar. 8°. N. Y., J. Wiley & sons, 1901.

- 351 ——— Irrigation near Phoenix, Arizona. pp. 98. il. pl. maps. 8°. Wash., Govt., 1897. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 2.) W^A

——— (U. S.—*House of Representatives.* 54th Cong. 2d sess. H. doc. 342. In v. 70.) W^A

- 352 ——— Report of progress of stream measurements, 1896. (In U. S.—*Interior, Dept. of the—Geological survey.* 18th Annual report, 1896 97. pt. 4. pp. 1–418. il. pl. maps. 1897.) W^A

———; [separate]. 4°.

Davis, Arthur Powell—Continued.

- 353 — Report on the irrigation investigation for the benefit of the Pima and other Indians on the Gila River reservation, Arizona. pp. 58. pl. maps. chart. 8°. Wash., Govt., 1897. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of*; U. S.—*Senate*. 54th Cong. 2d sess. S. doc. 27. In v. 1.) W^A

- 354 — River heights for 1896. pp. 100. 8°. Wash., Govt., 1897. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of*. Water-supply and irrigation papers. 11.) W^A

— — (U. S.—*House of Representatives*. 55th Cong. 2d sess. H. doc. 302. In v. 60.) W^A

Davis, J. B. See New York aqueduct commission.

- 355 Deacon, George Frederick. Vyrnwy works for the water supply of Liverpool. (In *Instit. civ. eng.* Min. of proc. 126:24-67. 1896.)

Discussion and correspondence follow the paper.

- 356 Deakin, Alfred. Irrigated India, an Australian view of India and Ceylon, their irrigation and agriculture. pp. 322. map. 8°. Lond., Thacker & co., 1893. W^A W^G

— See also, as president, Victoria—*Royal commission on water supply*; also, as minister, Victoria—*Water-supply department*.

- 357 Dean, G. A. Plea for an arterial drainage, embankment, and improvement act, etc., with principles upon which arterial drainage, drainage outfalls, embanking, warping, etc., should be carried out. pp. 131. 8°. [Lond.], S. Morris, 1861. W^P

- 358 Debauxe, Alphonse. Des eaux comme moyen de transport; navigation fluviale et maritime. Text & atlas [2 v.]. 8° & f°. Paris, Dunod, 1878. (Manuel de l'ingénieur des ponts et chaussées. 19.) W^G W^P

CONTENTS—Rivières.—Canaux.—Ports maritimes.

- 359 — Des eaux en agriculture. Text & atlas [2 v.]. 8° & f°. Paris, Dunod, 1876. (Manuel de l'ingénieur des ponts et chaussées. 18.) W^G W^P

CONTENTS—1. Curage et dessèchements.—2. Drainage.—Irrigations.—Colmatages.

— — 1884. W^G

- 360 — Irrigations. (In *his* Dictionnaire administratif des travaux publics. 2:330-348. 1880.) W^G

CONTENTS—Historique.—Établissement des prises d'eau d'irrigation.—Lois.—Jurisprudence.—Syndicats.—Jurisprudence relative aux syndicats.—Concessions de canaux d'irrigation.

- 361 — Traité des eaux. 3 v. & atlas. 8° & f°. Paris, Dunod, 1873. 75. (Manuel de l'ingénieur des ponts et chaussées. 15, 16, and 17.) W^G W^P

CONTENTS—pt. 1. (fasc. 15.) Hydraulique.—pt. 2. (fasc. 16.) Distributions d'eau.—pt. 3. (fasc. 17.) Météorologie.—Hydrologie.—Culture rationnelle. il. Atlas accompagnes fascicule 16, Distribution d'eau.

- 362 * Deby, Julien. Manuel d'irrigation. Brüssel, 1884.

- 363 Degousée, F. R. J. A. Guide de sondeur; ou, Traité théorique et pratique des sondages. Text & plates [2 v.]. 8°. Paris, Langlois et Le Clercq, 1847. W^G
- 364 Delocre, —. Mémoire sur la forme du profil à adopter pour les grands barrages en maçonnerie des réservoirs. (*In Ann. des ponts et chaussées: mém. et doc.*, 1866, [semest. 2]. pp. 212-272. pl.)
- 365 * Demoutzey, P. Studien über die arbeiten der wiederbewaldung und berassung der gebirge; übersetzt von A. von Seckendorff, Wien, 1880.
- 366 Dempsey, G. Drysdale. On the drainage of lands, towns, and buildings, revised, with large additions on recent practice in drainage engineering; by D. Kinnear Clark. Ed. 2. pp. 351. il. pl. 12°. Lond., Crosby Lockwood & son, 1890. W^A
- 367 — Rudimentary treatise on the drainage of districts and lands. pp. 142. il. 12°. Lond., J. Weale, 1849. W^P
- — Ed. 5, rev. pp. 160. il. 12°. Lond., Strahan & co., 1869. (Weale's ser.) W^C
- — Ed. 6. pp. 160. il. 12°. Lond., Lockwood & co., 1876. (Weale's ser.) W^G
- 370 Dennis, J. S. Water rights under Canadian northwest irrigation act. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Irrigation laws of northwest territories of Canada and Wyoming. pp. 11-46. pl. map. 1901.)
- 371 Denton, J. Bailey. Agricultural drainage; a retrospect of forty years' experiences. pp. 94. map. 8°. Lond., E. & F. N. Spon, 1883. W^A W^P
- 372 * — Intermittent downward filtration, *per se*, and in combination with surface irrigation. Ed. 2, enl. Lond., 1881.
- 373 — Storage of water. pp. 18. 8°. Lond., E. & F. N. Spon, 1874. W^G
- Reprinted papers with additions.
- 374 — Under-drainage of land; its development and maintenance. pp. 24. 8°. Lond., E. & F. N. Spon, [1875]. W^P
- Reprint of paper read before the Maidstone farmers' club, 1872; with an appendix explaining the assistance afforded to landowners by the General land drainage and improvement company.
- Denver, Colo. See, for irrigation congress held here in 1894, National irrigation congress, Official report.
- 375 [Derry, J. D.] [Some of the engineering features of American irrigation.] pp. 46. pl. 21. f°. Melbourne, Govt., 1885. (Victoria—*Roy. comm. on water supply.* Further progress report. no. 19.) W^A W^G
- Detienne, E. See, as joint author, Bodson, —.
- 377 * Dhunowree works, Ganges canal. (*In Professional papers on Indian engineering.* 7:207-214. 1870.)
- Dillingham, B. F. See, for report on water supply in Hawaiian islands, Schuyler, James Dix, and Allardt, G. F.

- 378 [Dinghel'shtedt, Nikolai.] Опытъ изученія приращенія Туркестанскаго края, Сыръ-Дарьинская область. [Experiments in the study of irrigation on the borders of Turkestan in the province of Syr-Daria.] pp. 513. pl. 5. 8°. С.-Петербургъ, Типографія Министерства путей сообщенія [St. Petersburg, Printing office of the minister of public works], 1893. W^A
- 379 Ditch owners' association. Synopsis of irrigation laws and priority decrees of Ouray county [Colo.], embracing Water district no. 68, division 5. pp. 32. 8°. n. p., Executive comm. of the assoc., 1898.
- 380 Ditching and draining; a manual of tables for computing work done. pp. 63. 12°. Lond., Blackie & son, 1860. W^A W^P
 Extracted from *Agriculturist's calculator*.
- 381 Dixon, W. A. Artesian water in connection with irrigation. (*In Roy. soc. N. S. W. Jour. and proc.* 1893. 27:466-468. [1894.]) W^A
- 382 — Deep well waters of Sydney; [analyses]. (*In Roy. soc. N. S. W. Jour. and proc.*, 1878. 12:133-141. 1879.)
- 383 — Well and river waters of New South Wales, [analyses]. (*In Roy. soc. N. S. W. Jour. and proc.*, 1889. 23:465-476. [1890.])
- 384 Dobson, Edward. Geelong water supply, Victoria, Australia. (*In Instit. civ. eng. Min. of proc.* 56:94-133. il. pl. 1879.)
 Discussion on the Geelong and Sandhurst water supplies is given, 56:152-170.
- 385 Donald, James. Land drainage, embankment, and irrigation; their practical application, cost, probable profits and the proper season for such undertakings. New ed., rev. pp. 156. il. pl. 16°. Lond., Wm. S. Orr & co., [1852]. W^C
- 386 * — Petit traité des irrigations; traduit de l'anglais par A. de Frarière. 12°. Paris, 1854.
- 387 Donkin, Bryan. Account of some experiments made in 1823 and 1824 for determining the quantity of water flowing through different shaped orifices. (*In Instit. civ. eng. Trans.* 1.215-218. 1836.)
- 388 Donkin, John B. Report on the proposal to divert water from the Snowy river into the Murrumbidgee and Lake George. (*In N. S. W.—Roy. comm. conservation of water.* Third and final report. Appendix. pp. 224-226. 1887.)
- 389 — and Gipps, F. B. Report on the Darling river. (*In N. S. W.—Roy. comm. conservation of water.* Third and final report. Appendix. pp. 27-29. 1887.)
 Further report on the Darling river, by F. B. Gipps, is in the same issue, page 29.
- 390 Dornès, A. Note sur le colmatage de la plaine de "La Crau" et le dessèchement des Marais de Fos en vue de leur mise en culture. pp. 39+[8]. pl. map. 8°. Paris, 1889. W^G
 Extrait des *Mémoires de la Société des ingénieurs civils*. Mai 1880.

391 Dorsey, Edward Bates. Irrigation; the results of irrigation as applied in various countries, and the benefits to be expected when applied to the arid sections of the United States. (*In Amer. soc. civ. eng. Trans.* 16:85-133. 1887.)

Paging includes discussion of the subject before the society.

392 Downing, Samuel. Elements of practical hydraulics for the use of students in engineering and architecture. pt. 1. Ed. 3, rev. and enl. pp. 232. il. 8°. Lond., Longmans, Green & co., 1875. W^P

393 Doyat. Mémoire sur la législation et la jurisprudence des cours d'eau non navigables et non flottables. (*In Ann. des ponts et chaussées: mém. et doc.*, 1837, semest. 2. pp. 273-333.)

394 Drummond, Willis, jr. Land grants in aid of internal improvements. (*In U. S.—Interior Dept. of the—Geological survey.* Report on lands of arid region of United States, with a more detailed account of the lands of Utah. pp. 164-181. 1878.)

Du Bois, A. Jay. *See*, as translator, Weisbach, Ludwig Julius.

395 Dubreuil, —. Analyse raisonnée de la législation sur les eaux; mise en rapport avec le dernier état de la législation et de la jurisprudence, augmentée d'un supplément, par Mm. Tardif and Cohen, avec des notes de J. J. Estrangin, et précédée d'une notice sur Dubreuil, par M. Ch. Giraud. New ed. 2 v. 8°. Aix, Aubin, 1842, 1843. W^G

396 [Dumas, Ernest.] Lois et documents relatifs au drainage [*en Angleterre*]. pp. 216. 4°. Paris, Imprimerie impériale. 1854. W^A

397 Dumble, E. T. Existence of artesian waters west of 97th meridian. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 99-102. 1890.)

398 Dumont, Adrien, and Dumont, A. De l'organisation légale des cours d'eau sous le triple point de vue de l'endiguement, de l'irrigation et du dessèchement: suivi d'un exposé de la législation lombarde. pp. 534. 8°. Paris, Mathias, 1845. W^G

399 *Dumont, Francois Marcellin Aristide. Pratique des distributions d'eau. Paris, 1863.

— *See also*, as joint author, Dumont, Adrien.

400 Dumont, G. Irrigation in the south of France; [abstract]. (*In Instit. civ. eng. Min. of proc.* 58:387. 1879.)

Original paper in *Annales du genie civile*, July, 1879. p. 497.

Duncan, C. M. *See*, as joint author, Porter, W. M.

Duncan, Charles A. *See*, as irrigator, South Dakota experiment station—*Agriculture, Department of*.

401 *Dunkelberg, Friedrich Wilhelm. Der wiesenbau in seinen landwirtschaftlichen und technischen grundzügen; nebst einem anhang über die entwässerung und die drain-bewässerung der felder nach Petersen. il. pl. Braunschweig, 1865.

Dünkelberg, Friedrich Wilhelm—Continued.

— —; nebst zwei anhängen über die entwässerung und die drain-bewässerung der felder nach Petersen, und über die technik der bewässerung mit städtischem canalwasser. Ed. 2. pp. 289+[5]. il. 8°. Braunschweig, Friedrich Vieweg und sohn, 1877. W^G

— —: nebst drei anhängen über entwässerung (drainage), die technik der bewässerung mit städtischem canalwasser und das angewandte nivelliren. Ed. 3, enl. pp. 389. il. pl. 8°. Braunschweig, Friedrich Vieweg und sohn, 1894. W^A

— *French*. De la création des prairies irriguées, principes économiques et techniques. suivis d'un appendice sur le drainage et l'irrigation par le drainage d'après Petersen; traduit par Achille Cochard. pp. 215. il. pl. 8°. Paris, V. Masson et fils, 1869. W^A

— *See also*, as editor. Fries, C. F. E.

402 Duponchel. Note sur l'irrigation souterraine et le drainage combinés. (*In Ann. des ponts et chaussées: mém. et doc.*, 1857, [semest. 1]. pp. 225-233.

403 Dupuit, A. J. E. Études théoriques et pratiques sur le mouvement des eaux courantes; suivies de considérations relatives au régime des grandes eaux, au débouché à leur donner, et à la marche des alluvions dans les rivières à fond mobile. pp. 275. pl. 8°. Paris, Carilian-Gœury, 1848. W^G

404 ——— Traité théorique et pratique de la conduite et de la distribution des eaux. Ed. 2. Text & atlas [2 v.]. 4° & sq. f°. Paris, Dunod, 1865. W^G W^P

405 Durand-Claye, Alfred Augustin. Dessèchement du lac Fucino; mémoire. (*In Ann. des ponts et chaussées: mém. et doc.*, 1878, semest. 1. pp. 205-231. pl.)

406 ——— Hydraulique agricole et génie rural, leçons professées à l'École des ponts et chaussées, par Alfred Durand-Claye, et rédigées par Félix Launay. 2 v. 8°. Paris, Octave Doin, 1890, 1892. W^P

Durand-Claye, Léon. *See*, as reviewer, *Le Rond*, L.

Durant, C. F. *See*, as joint author, Chesbrough, E. S.

407 Dutoit, —. Note sur les précautions à prendre dans la construction des grands réservoirs d'eau. (*In Ann. des ponts et chaussées: mém. et doc.*, 1895, semest. 1. pp. 658-676. pl.)

— —: [abstract entitled] Precautions to be taken in the construction of large reservoirs. (*In Instit. civ. eng. Min. of proc.* 123:484. 1896.)

408 Dutton, C. E. Irrigable lands of the valley of Sevier river. (*In U. S.—Interior, Dept. of the—Geological survey. Report on the lands of the arid region of the United States, with a more detailed account of the lands of Utah.* pp. 127-148. 1878.)

Dutton, C. E.—Continued.

- 409 ——— Report [on hydrographic work of the irrigation survey].
(*In U. S.—Interior, Dept. of the—Geological survey. 10th*
Annual report, 1888–89. pt. 2. pp. 78–108. 1890.) W^A
- 410 Dwelshauvers-Dery, Victor Auguste Ernest. Experiments on the
measurement of water over weirs. (*In Instit. civ. eng. Min.*
of proc. 114:333–339. 1893.)
- 411 Dwyer, John. Principles and practice of hydraulic engineering
applied to the conveyance of water, thorough drainage, and
mill power; also tables of earthwork. pp. 204. pl. Dublin,
J. McGlashan, 1847. W^C
- 412 *Dyas, J. H. Cavour canal; memorandum [based on report of
Italian irrigation canal company]. 1865. (*N. W. P.—P. w. d.—*
Irrigation branch. no. 70.)
- (In *Professional papers on Indian engineering. 2:369–*
381. 1865.)
- Dyer, C. W. D. *See, as joint author, Flynn, A. D.*
- 413 Egypt—*Public works ministry.* Irrigation report, 1884–1888; by
C. C. Scott Moncrieff. 4°. Cairo, [1884]–1889.
- [Irrigation] report for 1890, by J. C. Ross; [abstract].
(*In Instit. civ. eng. Min. of proc. 107:466–470. 1892.*)
- [Irrigation] report for 1891, by J. C. Ross; [abstract].
(*In Instit. civ. eng. Min. of proc. 112:413–414. 1893.*)
- 414 ——— Note on the corvée in Egypt; by [C. C.] Scott Mon-
crieff. pp. 13. 4°. Cairo, Govt., 1886.
- 415 ——— Note on the Nile flood of 1887; [by C. C. Scott Mon-
crieff]. pp. 36. il. pl. 4°. Cairo, Govt., 1888.
- 416 ——— Note on the prevention of sharaki land in Egypt; by
C. C. Scott Moncrieff. pp. 27. pl. 4°. Cairo, Govt., 1889.
- 417 ——— Note on the Wadi Raian project; by C. C. Scott Mon-
crieff. pp. 10. 4°. Cairo, Govt., 1889.
- 418 ——— Notes on the distribution of water and maintenance
of works in the basin systems of Upper Egypt; by Justin C.
Ross, inspector-general of irrigation. Text and maps [2 v.].
4° & f°. Cairo, Govt., 1892. W^A W^G
- 419 ——— Notes on the Wady Rayan; by G. A. Liernur, [J. H.]
Western, and C. C. Scott Moncrieff. pp. 33. map. 4°. Cairo,
Govt., 1888.
- 420 ——— Rapport sur le canal Ibrahimieh, présenté à S. E. le
Ministre des travaux publics; par C. C. Scott Moncrieff, inspect-
eur général des irrigations. pp. 13. il. f°. Le Caire, 1884.
- 421 ——— Rapports sur le système d'irrigation dans la Basse-
Égypte, et sur le canal Ismaïlieh, présentés à S. E. le Ministre
des travaux publics; par C. C. Scott-Moncrieff. pp. 24. il.
f°. Le Caire, 1883.

Egypt—Public works ministry—Continued.

- 422 ——— Report on the irrigation of Egypt, and an examination of a proposal relating to it, by Aly Pasha Moubarik, Minister of public works; [abstract]. (*In Instit. civ. eng.* Min. of proc. 77:425-428. 1884.)
Report dated Cairo, April 24, 1883.
- 423 ——— Report on the low Nile of 1888 and on the measures to be undertaken to prevent sharaqi in Upper Egypt; by Justin C. Ross, inspector-general of irrigation. pp. 96. pl. 4°. Cairo, Govt., 1889.
- 424 * **Ehmann**, ——— von. Die versorgung der wasserarmen Alb mit fliessendem trink- und nutzwasser, und das öffentliche wasser-versorgungs-wesen im königreich Württemberg. Stuttg., 1884.
- 425 **Eisen**, Gustav. Raisin industry; a practical treatise on the raisin grapes, their history, culture, and curing. pp. 223. il. pl. San Francisco, H. S. Crocker & co., 1890. W^A
Cultivation of the raisin grape by irrigation is here fully described. A condensed statement of the same is given in U. S.—*Agriculture, Dept. of.—Artesian and underflow investigation and irrigation inquiry*. Report on progress of irrigation investigation. pt. 1. pp. 225-233. 1891.
- 426 **Eldridge**, George Homans. Geological reconnoissance of north-western Wyoming. pp. 72. pl. map. 8°. Wash., Govt., 1894. (U. S.—*Interior, Dept. of the—Geological survey*. Bulletin 119.)
——— See also, as joint author, **Emmons**, Samuel Franklin.
- 427 **Elliott**, C. G. Practical farm drainage; why, when and how to tile drain, by Elliott; and Manufacture of drain tile, by J. J. W. Billingsley. pp. 91. il. 12°. Indianapolis, J. J. W. Billingsley, 1882. W^C
- 428 **Ellis**, Theodore G. Description and results of hydraulic experiments with large apertures at Holyoke, Massachusetts, in 1874. (*In Amer. soc. civ. eng.* Trans. 5:19-101. pl. 1876.)
Discussion on this subject is given, 5:297, 298.
- 429 ——— Flow of water in open channels. (*In Amer. soc. civ. eng.* Trans. 6:250-257. 1878.)
- 430 **Emmons**, Samuel Franklin, **Cross**, Whitman, and **Eldridge**, G. H. Geology of the Denver basin in Colorado. pp. 556. il. pl. 4°. Wash., Govt., 1896. (U. S.—*Interior, Dept. of the—Geological survey*. Monographs. vol. 27.) W^A
Contains description of artesian wells and structural conditions in vicinity of Denver.
- 431 * **Endemann**. Das ländliche wasserrecht. Cassel, 1862.
- 432 **Estee**, Morris M. Irrigation problem. pp. 24. 8°. [Sacramento], 1874. W^A
Annual address delivered before State agricultural society of California at Sacramento, Sept. 23, 1874.
- 433 **Ewbank**, Thomas. Descriptive and historical account of hydraulic and other machines for raising water, ancient and modern; with observations on various subjects connected with the mechanic arts. pp. 582. il. 8°. N. Y., D. Appleton & co., 1842. W^P
——— Ed. 15. pp. 612. il. 8°. N. Y., Scribner & co., 1870 [c1863]. W^A

- 434 * **Eyth, Max.** Das agricultur-maschinenwesen in Aegypten. Stuttgart., 1867.
v. 1. Die landwirtschaftliche bewässerung Aegyptens.
— *See also*, as joint author, **Greig**.
- 435 **Fahey, Charles Swaine.** River Indus as a source of supply for irrigation canals in Sind. (*In Instit. civ. eng. Min. of proc. 71:279-297. il. 1883.*)
- 436 **Fanning, J. T.** Practical treatise on water-supply engineering; relating to the hydrology, hydrodynamics, and practical construction of water-works in North America. pp. 619. il. pl. 8°. N. Y., D. Van Nostrand, 1877. W^C W^P
— — Ed. 2. pp. 619. il. pl. 8°. N. Y., Van Nostrand, 1878. W^G
— — Ed. 4. pp. 621. il. pl. 8°. N. Y., D. Van Nostrand, 1884. W^C
— — Ed. 5, rev. pp. 644. il. pl. 8°. N. Y., D. Van Nostrand, 1886. W^C
— — Ed. 7, rev. pp. 644. il. pl. 8°. N. Y., Van Nostrand company, 1889. W^A W^G
* — — Ed. 10. N. Y., Van Nostrand co., 1892.
Additional matters relating to evaporation, filtration, and to artesian wells are added to this edition.
— — Ed. 11, rev. pp. 644. il. pl. 8°. New York, Van Nostrand co., 1893. W^A
— — Ed. 14, rev. pp. 644. il. pl. 8°. N. Y., D. Van Nostrand company, 1899. W^C
- 437 **Fellenberg, Ziegler von A.** Kurze bewässerungslehre für den schweizerischen landmann. Bern, 1870.
- 438 **Fellows, A. L.** Measurement of water. pp. 61. il. 8°. Denver, State, 1900. (*Colo.—Engineer dept. Irrigation bulletin. 1.*)
- 439 **Fernow, B. E.** Relation of irrigation problems to forest conditions. (*In U. S.—Senate—Irrigation and reclamation of arid lands. Select committee on. Report. pt. 5. pp. 112-124. 1890.*)
- 440 **Ferrari, Bernardino.** Account of the method of closing the Naviglio Grande and Muzza channels of navigation and irrigation in Lombardy; extract from an appendix to a treatise on the corrosion of rivers, translated by S. Best. (*In Reports on various professional subjects. Madras Presidency. Ed. 2. 2:40. pl. 1859.*)
- 442 **Field, John E.** Water laws of Colorado. (*In Mead, Elwood. Water rights on Missouri river and its tributaries. pp. 39-50. 1899.*)
— *See also*, as state engineer 1897-98, **Colorado.—Engineer department**, Biennial report.
Fields, John. *See*, as joint author, **Holter, George L.**

- 443 Filonardi, A. Sardegna, Campidano di Cagliari; relazione. (*In Italy—Commissione idraulica. Irrigazione del Campidano di Cagliari.* [1887?]) W^G
- 444 Fitz Gerald, Desmond. Evaporation. (*In Amer. soc. civ. eng. Trans.* 15:581-646. pl. 1886.)
- 445 — Flow of water in 48-inch pipes. (*In Amer. soc. civ. eng. Proc.* 22:1-35. il. pl. 1896; with discussion, *Trans.* 35:241-304. il. pl. 1896.)
- 446 — Maximum rates of rainfall. (*In Amer. soc. civ. eng. Trans.* 21:93-96. pl. 1889.)
Observations taken at Chestnut Hill reservoir, Boston, 1879-'89.
- 447 — Rainfall, flow of streams, and storage. (*In Amer. soc. civ. eng. Trans.* 27:253-306. 1892.)
Paging given includes discussion on the subject.
- 448 Flamant, —. Étude sur les formules de l'écoulement de l'eau dans les tuyaux de conduite. (*In Ann. des ponts et chaussées: mém. et doc.*, 1892, semest. 2. pp. 301-345.)
- 449 Flynn, A. D., and Dyer, C. W. D. Cippoletti trapezoidal weir. (*In Amer. soc. civ. eng. Trans.* 32:9-33. il. 1894.)
- 450 Flynn, Patrick John. Flow of water in open channels, pipes, sewers, conduits, etc.; with tables based on the formulæ of D'Arcy, Kutter, and Bazin. pp. 118. 24°. N. Y., Van Nostrand co., 1886. (Van Nostrand's science ser.) W^G
- 451 — Flow of water in open channels; with tables based on Kutter's formula. (*In Tech. soc. Pacif. coast. Trans.* 7:71-104. 1890.)
- 452 — Hydraulic tables based on the formulæ of d'Arcy and Kutter. (*In Tech. soc. Pacif. coast.* 2:37-61. 1885.)
- 453 — Hydraulic tables for the calculation of the discharge through sewers, pipes, and conduits; based on Kutter's formula. pp. 115. 16°. N. Y., Van Nostrand company, 1883. (Van Nostrand's science ser.) W^G
Reprinted from *Van Nostrand's magazine*.
- 454 — Irrigation canals and other irrigation works, including the flow of water in irrigation canals and open and closed channels generally; with tables simplifying and facilitating the application of the formulæ of Kutter, D'Arcy, and Bazin. [2 v. in 1.] il. 4°. San Francisco, [P. J. Flynn], 1892.
W^A W^G W^P W^C
- CONTENTS.—[v. 1] Irrigation canals and other irrigation works.—[v. 2.] Flow of water in irrigation canals, ditches, flumes, pipes, sewers, conduits, etc.: with tables simplifying and facilitating the application of the formulæ of Kutter, D'Arcy, and Bazin.
- 455 — Kutter's formula. (*In Tech. soc. Pacif. coast. Trans.* 3:16-25. 1886.)
- 456 — Shrinkage of earthwork. (*In Tech. soc. Pacif. coast. Trans.* 2:179-198. il. 1885.)
- 457 Foley, Frank. Suggestions for the irrigation of western lands to procure employment and homes for the laboring people of the United States. pp. 20. 4°. [Chicago, F. Foley, 1894.] W^C
A form of a bill which the author suggests be introduced in Congress, with discussion of the same.

- 458 **Follett, W. W.** Red river valley artesian basin; report. (In **U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.** Final report. pt. 2. pp. 87-94. 1892.)
- 459 ——— Report on Miles City, Montana, artesian basin. (In **U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.** Final report. pt. 2. pp. 96, 97. 1892.)
- 460 ——— Study of the use of water for irrigation on the Rio Grande del Norte. (In **U. S.—State, Dept. of.** Equitable distribution of the waters of the Rio Grande. pp. 47-108. 1898.)
Investigates claims of Mexican government, and also considers the sufficiency of the water supply for reservoir at El Paso.
- 461 ——— Underground water surveys; report. (In **U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.** Final report. pt. 2. pp. 19-29. 1892.)
——— See also, as joint author, **Mills, Anson.**
- 463 **Foltz.** Note sur les irrigations de la Moseile dans le département des Vosges. (In **Ann. des ponts et chaussées: mém. et doc.**, 1849. semest. 2. pp. 186-202. pl.)
- 464 **Folwell, Amory Prescott.** Water-supply engineering; designing, construction, and maintenance of water-supply systems, both city and irrigation. pp. 562. il. pl. 8°. N. Y., Wiley & sons, 1900. W^G W^C
——— Ed. 2. rev. pp. 570. il. 8°. N. Y., J. Wiley & sons, 1901. W^A
- 465 **Fontaine, E.** Contributions to the science of hydraulic engineering. pp. 41. pl. map. 4°. Wash., Govt., 1879. W^G
CONTENTS—pt. 1. Drainage and irrigation.—pt. 2. Physical history and geography of lake Pontchartrain.—pt. 3. Mississippi river.
- 466 * **Fontes y Musso.** Historia de los riegos de Lorea. Murcia. 1847.
- 467 **Foote, A. D.** Automatic waste weir. (In **Amer. soc. civ. eng. Trans.** 18:59-61. pl. 1888.)
- 468 ——— Report [to Idaho water company] on the irrigating and reclaiming of certain desert lands in Idaho, and other projects connected therewith. pp. 54. il. map. 4°. n. p., 1887. W^G
- 469 ——— Water-meter for irrigation. (In **Amer. soc. civ. eng. Trans.** 16:134-137. il. 1887.)
- 470 **Forez canal; apparatus for gauging water supply; [abstract].** (In **Instit. civ. eng. Min. of proc.** 65:397, 398. 1881.)
Original paper in **Annales des travaux publics**, June, 1881, p. 375. 1 pl.
- Forrest, James.** See, as editor, **Institution of civil engineers, Minutes of proceedings.**
- 471 **Fortier, Samuel.** Conveyance of water in irrigation canals, flumes, and pipes. pp. 86. il. pl. 8°. Wash., Govt., 1901. (**U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.** Water-supply and irrigation papers. 43.) W^A
——— (**U. S.—House of Representatives.** 56th Cong. 2d sess. H. doc. 486. In v. 63.) W^A

Fortier, Samuel—Continued.

- 472 ——— Duty of water in Gallatin valley, [Montana]. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation: report. pp. 175–196. il. pl. map. 1900.)

———: [separate]. [1901.]

——— (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Duty of water in Nebraska. pp. 175–196. il. pl. map. 1901.)

- 473 ——— Earthen dams. pp. 56. il. pl. 8°. Logan, State, 1896. (Utah agric. college exper. sta. Bulletin 46.)

- 474 ——— Preliminary report on seepage water and the underflow of rivers. pp. 35. 8°. [Salt Lake City], 1895. (Utah agric. college exper. sta. Bulletin 38.) W^A

- 475 ——— Seepage water of northern Utah. pp. 50. il. pl. maps. 8°. Wash., Govt., 1897. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 7.) W^A

——— (*U. S.—House of Representatives.* 54th Cong. 2d sess. H. doc. 349. In v. 70.) W^A

- 476 ——— Water for irrigation. (*In Sanborn, J. W.* Sub-irrigation vs. surface irrigation. pp. 9–28. 1893.)

- 477 ——— Water supply of Cache valley. pp. 50. il. pl. map. 8°. Logan, State, 1897. (Utah agric. college exper. sta. Bulletin 50.)

CONTENTS—Loss due to evaporation.—Gain from seepage waters.—Capacities of the various canals.—Irrigating duty of water.

Foster, Luther. *See*, as director, South Dakota experiment station—*Agriculture, Department of.*

- 478 Fournié, Victor. Note sur deux formules relatives à l'écoulement permanent et uniforme des liquides. (*In Ann. des ponts et chaussées: mém. et doc.*, 1898, trimest. 3. pp. 1–10.)

———: [abstract entitled] Continuous and uniform flow of liquids. (*In Instit. civ. eng. Min. of proc.* 136:391. 1899.)

- 479 Fox, William. Irrigation in southern California with special reference to the artesian wells in San Bernardino county. (*In Instit. civ. eng. Min. of proc.* 105:238–248. il. 1891.)

- 480 * Fraissinet, Edm. Die volkswirtschaftliche bedeutung der privatflüsse und bäche für die industrie und landwirtschaft. Leipz., 1891.

- 481 France—*Agriculture, du commerce et des travaux publics, Ministère de l'.* Instructions pratiques sur le drainage; [par Hervé Mangon]. pp. 216. il. 12°. Paris, Imprimerie impériale, 1855. W^A W^P W^C

- 482 ——— *Agriculture et du commerce, Ministère de l'.* Annuaire des eaux de la France pour 1851. . . . rédigé par une commission spéciale. pp. 313. 4°. Paris, Imprimerie nationale, 1851. W^A

France—*Agriculture et du commerce, Ministère de l'—Continued.*

- 483 ——— *Pratique et législation des irrigations dans l'Italie supérieure et dans quelques états d'Allemagne; rapport, par [J^h] de Mauny de Mornay. 2 pts. 8°. Paris, Imprimerie royale, 1844.*
 CONTENTS—pt. 1. Pratique.—pt. 2. Législation. W^A
- 484 ——— *Agriculture, Direction de l'. Irrigations dans le département de Vaucluse; rapport sur le concours ouvert en 1877 pour le meilleur emploi des eaux d'irrigation, par J. A. Barral. pp. 582. il. pl. 6. f°. Paris, Imprimerie nationale, 1878.* W^A
- 485 ——— *Irrigations dans le département des Bouches-du-Rhône; rapport sur le concours ouvert en 1875 pour le meilleur emploi des eaux d'irrigation, par J. A. Barral. pp. 548. il. pl. 4. f°. Paris, Imprimerie nationale, 1876.* W^A W^G
- *; rapport sur le concours ouvert en 1876 pour le meilleur emploi des eaux d'irrigation, par J. A. Barral. pp. 271. pl. f°. Paris, Imprimerie nationale, 1876.* W^A W^G
- 486 ——— *Agriculture, Ministère de l'—Agriculture, Direction de l'. Agriculture, les prairies et les irrigations de la Haute-Vienne; rapports, par J. A. Barral. pp. 771. pl. 4°. Paris, Imprimerie nationale, 1884.* W^G
- *Rapports sur les concours d'irrigation dans la Haute-Vienne en 1877 et 1878 et sur le concours de la prime d'honneur dans ce département en 1879.*
- 487 ——— *Hydraulique agricole, Direction de l'. Bulletin, A-J, 1884-'88. pl. maps. 8°. Paris, Imprimerie nationale, 1884-'88.* W^G
- *Documents officiels; statistique; rapports.*
- 488 Francis, James Bicheno. *Experiments on the flow of water over submerged weirs. (In Amer. soc. civ. eng. Trans. 13:303-312. 1884.)*
- *; [abstract]. (In Instit. civ. eng. Min. of proc. 79:402. 1885.)*
- 489 ——— *High walls or dams to resist the pressure of water. (In Amer. soc. civ. eng. Trans. 19:147-200. pl. 1888.)*
Paging includes discussion on the subject.
- *; [abstract]. (In Instit. civ. eng. Min. of proc. 96:389. 1889.)*
- 490 ——— *Lowell hydraulic experiments; being a selection from experiments on hydraulic motors, on the flow of water over weirs, in open canals of uniform rectangular section, and through submerged orifices and diverging tubes, made at Lowell, Massachusetts. pp. 251. pl. 23. f°. N. Y., D. Van Nostrand, 1868.* W^P
- *Ed. 4. pp. 286. pl. 23. f°. N. Y., D. Van Nostrand, 1883.* W^A
- 491 ——— *On the cause of the maximum velocity of water flowing in open channels being below the surface. (In Amer. soc. civ. eng. Trans. 7:109-113. 1878.)*
Discussion on this subject is given. 7:122-130.

Francis, James Bicheno--Continued.

— —; [abstract]. (*In* *Instit. civ. eng. Min. of proc.* 55:357. 1879.)

492 — Provincetown dike. (*In* *Amer. soc. civ. eng. Trans.* 1:329-332. pl. 1872.)

— *See also*, as chairman of committee, *American society of civil engineers*, Report of committee on the cause of failure of the South Fork dam.

Frankenfield, H. C. *See* *United States—Agriculture. Department of—Weather bureau*, Daily river stages at river-gauge stations on the principal rivers of the United States.

494 Franklin, F. A. Report on canals and irrigation in India. (*In* *N. S. W.—Roy. comm. conservation of water.* First report. pp. 108-114. 1885.) W^A

495 *Franzius, Ludwig. and Sonne, Ed. *Der wasserbau.* Ed. 2. Leipz., 1882. (*Handbuch der ingenieurwissenschaften.* v. 3.)

Frarière, A. de. *See*, as translator, Donald, James.

496 *Frauenholz, W. Ueber die bessere benutzung des wassers und der wasserkräfte und über den schutz vor wasserschäden.

497 * — Wasser in bezug auf wirthschaftliche aufgaben der gegenwart. München, 1881.

498 Freeman, John R. Nozzle as an accurate water-meter. (*In* *Amer. soc. civ. eng. Trans.* 24:492-527. 1891.)
Paging includes discussion on the subject.

499 French, Henry F. Farm drainage: the principles, processes, and effects of draining land . . . including tables of rain-fall. pp. 384. il. pl. 12°. N. Y., A. O. Moore & co., 1859.
W^A W^P W^C

— — 1865 [c1859.] W^A

— — 1884. W^C

500 *Fries, C. F. E. *Lehrbuch des wiesenbaus; bearbeitet von F. W. Dünkelberg.* Ed. 2. Braunschweig. 1866.

501 *Frisi, Paolo. *Del modo di regolare i fiumi e i torrenti.* Ed. 1. Lucca, 1762.

* — — Ed. 2, enl. Firenze, 1770.

— *English.* *Treatise on rivers and torrents, with the method of regulating their course and channels: to which is added, An essay on navigable canals; translated by John Garstin.* pp. 184. pl. 4°. Lond., Longman, Hurst, Rees, Orme, and Brown, 1818. W^G W^C

— — New ed., rev. pp. 226. pl. 12°. Lond., J. Weale, 1861. (*Weale's ser.*) W^P W^C

502 Froidour, Louis de. *Lettre à Monsieur Barrillon, contenant la relation et la description des travaux qui se sont en Languedoc pour la communication des deux mers.* pp. 101. pl. 16°. Toulouse, 1672. W^C W^P

- 503 * **Frontinus, Sextus Julius.** De aquæductibus urbis Romæ commentarius; operâ J. Poleni. 4°. Patavii, 1722.
- —; adpersis Joannis Poleni aliorumque notis una cum suis editus a Georgio Christiano Adler. pp. 202 + [7]. maps 2. 8°. Altonæ, 1792. W^c
- * — *French.* Commentaire de Frontin sur les aqueducs de Rome; traduit par Jean Rondelet. 2 v. & atlas. 1820–1821. Text and translation on opposite pages.
- —; [extrait intitulé] Mémoire sur les aqueducs romains au temps des empereurs Nerva et Trajan (an 98 de notre ère); par Rozat de Mandres. (*In Ann. des ponts et chaussées: mém. et doc.*, 1858, semest. 2. pp. 184–205. pl.)
- *English.* Two books on the water supply of the city of Rome of Sextus Julius Frontinus, water commissioner of the city of Rome, A. D. 97, a photographic reproduction of the sole original Latin manuscript, and its reprint in Latin, also a translation into English and explanatory chapters; by Clemens Herschel. pp. 296. il. pl. chart. 4°. Boston, Dana Estes, [c 1899]. W^P W^c
- 504 **Fteley, Alphonse.** Flow of the Sudbury river, Massachusetts, for the years 1875 to 1879. (*In Amer. soc. civ. eng. Trans.* 10: 225–234. pl. 1881.)
- Discussion on rainfall and the flow of streams given, 10: 235–250.
- *See also* **New York aqueduct commission.**
- 505 — *and* **Stearns, F. P.** Description of some experiments on the flow of water made during the construction of works for conveying the water of Sudbury river to Boston. (*In Amer. soc. civ. eng. Trans.* 12: 1–118. pl. 1883.)
- —; [abstract]. (*In Instit. civ. eng. Min. of proc.* 72: 336.)
- 506 **Fulmer, Elton.** Irrigation experiments in sugar-beet culture in the Yakima valley. pp. 30. pl. map. 8°. Pullman, 1897. (*Wash. agric. exper. sta. Bulletin* 31.) W^A
- Fulton, R. L.** *See also*, as joint author. **Newlands, Francis Griffith.**
- Furnas, R. W.** *See*, as commissioner. **United States—Agriculture, Department of**, Report on climatic and agricultural features and needs of arid regions, etc.
- 507 * **Fürstenhaupt, F. G.** Practisches handbuch der bodenkultur durch entwässerung, bewässerung und umwandlung. Berlin, 1860.
- Pt. 1. Entwässerung.
- 508 * **Galens, Georges.** Des cours d'eau souterrains dans la province d'Oran. pp. 13. Alger, Fontana et cie., [1895?].
- 509 **Gallo, Anjel Custodio.** Lejislacion de aguas; estudio presentado al Congreso de agricultores. pp. 133. 8°. Santiago, 1875. W^c
- 510 **Galvan Rivera, Mariano.** Ordenanzas de tierras y aguas, ó sea formulario geométrico-judicial. pp. 300. 8°. México, 1855. W^c

- 511 **Gamble, John George.** Storage reservoir in the Achterfeld [South Africa; abstract]. (*In* *Instit. civ. eng.* Min. of proc. 62:380, 381. 1880.)
Original paper in *South African phil. soc. Trans.* Oct. 29, 1879.
- 512 — Water supply in Cape Colony. (*In* *Instit. civ. eng.* Min. of proc. 90:255-294. 1887.)
- 513 * **Ganguillet, E., and Kutter, W. R.** Versuch zur aufstellung einer neuen allgemeinen formel für die gleichförmige bewegung des wassers in canälen und flüssen, gestützt auf die resultate der in Frankreich vorgenommenen umfangreichen und sorgfältigen untersuchungen und der in Nord-Amerika ausgeführten grossartigen strommessungen. Ed. 2. 8°. pl. Bern, 1877.
Published first in 1869 in *Zeitschrift des österreichischen ingenieur-und architecten-vereins.*
— *English.* General formula for the uniform flow of water in rivers and other channels; translated with numerous additions, including tables, diagrams, and elements of over 1,200 gaugings of rivers, etc., by Rudolph Hering and John C. Trautwine, jr. pp. 240. pl. N. Y., Wiley & sons, 1889. W^G
— — Ed. 2. pp. 240. pl. N. Y., Wiley & sons, 1893 W^A
[1891].
- 514 **Gannett, Henry.** Dictionary of altitudes in the United States. pp. 325. 8°. Wash., Govt., 1884. (*U. S.—Interior, Dept. of the—Geological survey.* Bulletin 5.)
— — Ed. 2 [rev.]. pp. 393. 8°. Wash., Govt., 1891. (*U. S.—Interior, Dept. of the—Geological survey.* Bulletin 76.)
— — Ed. 3 [rev.]. pp. 775. 8°. Wash., Govt., 1899. (*U. S.—Interior, Dept. of the—Geological survey.* Bulletin 160.)
— — (*U. S.—House of Representatives.* 55th Cong. 3d sess. H. doc. 305. In v. 88.) W^A
- 515 — Profiles of rivers in the United States. pp. 100. map. charts. 8°. Wash., Govt., 1901. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 44.) W^A
— — (*U. S.—House of Representatives.* 56th Cong. 2d sess. H. doc. 487. In v. 63.) W^A
- 516 — Report on arable and pasture lands of Colorado. (*In* *U. S. Interior, Dept. of the—Geological and geographical survey of the territories.* 10th Annual report, 1876. pp. 311-347. 1878.) W^A
- 517 **Garay, Francisco de.** Drainage of the valley of Mexico. (*In* *Amer. soc. civ. eng.* Trans. 12:153-178. map. 1883.)
— —; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 73:424.)
- 518 * — El valle de México: apuntes históricos sobre su hidrografía. pp. 93. maps. México, 1888.
- 519 **Garnault, H. W.** Reservoirs for the Damooda river. (*In* *Professional papers on Indian engineering.* 4:337-348. 1867.)
Includes memorandum by Lieutenant-Colonel Short, superintending engineer.
- Garstin, John.** See, as translator. Frisi, Paolo.

- 520 *Gaudard, Jules. Barrage du Periyar; barrage en routes. pp. 35. pl. 8°. Lausanne, 1898.
- 521 Gemmell, Robert C. Duty of water on Big Cottonwood creek, [Utah]. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 197–210. pl. map. 1900.)
 ——— (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Duty of water in Nebraska. pp. 197–210. pl. map. 1901.)
 ——— *See also*, as state engineer, *Utah—Engineer department.*
- 522 Genieys, R. Essai sur les moyens de conduire, d'élever et de distribuer les eaux. Text and plates [2 v.]. 4°. Paris, Carilian-Gœury, 1829. W⁶ W¹ W^c
- 523 [Gholovnin, D. N.] Гидрологическія изслѣдованія; докладъ, Д. Н. Головинна. [Hydrologic investigations; report, by D. N. Gholovnin.] pp. 14. 8°. n. p., [1894].
 Read at the united session of the Geography, Mathematics, and Physical geography divisions of the Imperial Russian geographic society, March 10, 1894.
 From Society bulletin, vol. 30.
- 524 ——— Обь орошеніи въ Сѣверо-Американскихъ Соединенныхъ Штатахъ; Д. Н. Головинна. [Irrigation in the United States of America; by D. N. Gholovnin. pp. 96. il. pl. 4°. С.-Петербургъ [St. Petersburg], 1895. (Институтъ инженеровъ путей сообщенія Императора Александра I.)
 Communication read before the Institute of road and waterway engineers of Emperor Alexander I. Contains a bibliography.
- 526 *Gibbs, J. Cotton cultivation in its various details, the barrage of great rivers, and instructions for irrigating, embanking, draining, and tilling land in tropical and other countries, especially adapted to India. 5 pls. 8°. Lond., 1862.
- 527 Gilbert, Grove Karl. Irrigable lands of Salt Lake drainage system. (*In U. S.—Interior, Dept. of the—Geological survey.* Report on lands of the arid region of the United States. pp. 112–126. 1878.)
- 528 ——— Underground water of Arkansas valley in eastern Colorado. (*In U. S.—Interior, Dept. of the—Geological survey.* 17th Annual report, 1895–96. pt. 2. pp. 551–601. il. pl. 1896.)
 ——— ———; [separate]. 4°.
 ——— ——— pp. 51. il. pl. 4°. Wash., Govt., 1896.
- 529 ——— Water supply, [Utah]. (*In U. S.—Interior, Dept. of the—Geological survey.* Report on lands of the arid region of the United States. pp. 57–80. 1878.)
- 531 Gipps, Frederick B. Further report on the Darling river. (*In N. S. W.—Roy. comm. conservation of water.* Third and final report. Appendix. p. 29. 1887.)
 First part of report is in same issue, pages 27 to 29, written by F. B. Gipps and J. B. Donkin.

- Gipps, Frederick B.—Continued.
- 532 ——— Importance of a comprehensive scheme of water storage and canalization for the future welfare of this colony, [New South Wales]. (*In Roy. soc. N. S. W. Jour. and proc.*, 1881. 15:309-329. 1882.)
- 533 ——— Report on the Namoi river. (*In N. S. W.—Roy. comm. conservation of water. First report.* pp. 121-122. 1885.)
- 534 ——— Report on the Upper Murray valley. (*In N. S. W.—Roy. comm. conservation of water. First report.* pp. 136-138. 1885.)
 ——— *See also*, as joint author, **Donkin, John B.**
- 535 **Gipson, A. E.** Irrigation for the farm. pp. 58. il. 12°. Denver, Republican pub. co., 1889. W^c
- 536 **Glassford, W. A.** Climate of Arizona, with particular reference to rainfall and temperature and their influence upon the irrigation problems of the territory. (*In Greely, A. W. Irrigation and water storage in the arid region.* pp. 301-315. 1891.)
 ——— ——— (*In Greely, A. W. Report on the climate of Arizona.* pp. 23-37. 1891.)
- 537 ——— Climate of California and Nevada, with particular reference to rainfall and temperature and their influence upon irrigation problems of the two states. (*In Greely, A. W. Irrigation and water storage in the arid region.* pp. 333-356. 1891.)
 ——— ——— (*In Greely, A. W. Report on the climate of California and Nevada.* pp. 23-46. 1891.)
- 538 ——— Climate of New Mexico, with particular reference to the rainfall and temperature and their influence upon the irrigation problems of the territory. (*In Greely, A. W. Irrigation and water storage in the arid region.* pp. 316-332. 1891.)
- 539 **Goldmark, Henry.** Power plant, pipe line and dam of the Pioneer electric power company, at Ogden, Utah. (*In Amer. soc. civ. eng. Proc.* 23:264-323. 1897; with discussions, *Trans.* 38:246-314. 1898.)
- 540 **Good, William.** Construction of the new Nadrai, Kali Nadi, aqueduct, Ganges canal. (*In Instit. civ. eng. Min. of proc.* 105:147-159. il. pl. 1891.)
- 541 **Gordon, George.** Irrigation in Victoria. (*In Instit. civ. eng. Min. of proc.* 142:326-333. 1900.)
- 542 ——— Value of water and its storage and distribution in southern India. (*In Instit. civ. eng. Min. of proc.* 33:376-428. 1872.)
 Paging embraces discussions on the paper.
- 543 **Gordon, Robert.** Hydraulic work in the Irawadi delta. (*In Instit. civ. eng. Min. of proc.* 113:276-313. il. pl. 1893.)
- 544 ——— Notes on subjects connected with works in the Irrawaddy circle, British Burma; with records of experiments on the double float and Woltmann meter current measurements. pp. 63. pl. map. f°. Rangoon, Govt., 1883. W^g

Gordon, Robert—Continued.

- 545 — Report on the Irrawaddy river. 3 v. maps. f°. Rangoon, Govt., 1879, 1880. W^G
 CONTENTS—v. 1. (pt. 1.) Hydrography of the Irrawaddy river.—v. 1. (pt. 2.) Hydrology of the Irrawaddy river, with appendices and supplements.—v. 2. (pt. 3.) Hydraulics of the Irrawaddy, with appendices and supplement D.—v. 3. (pt. 4.) Hydraulic works connected with the Nawoon river, with appendices.
- 546 Goss, Arthur. Value of Rio Grande water for the purpose of irrigation. pp. 31–58. 8°. Las Cruces, 1893. (N. Mex. agric. exper. sta. Bulletin 12.) W^A
- 547 *Gould, E. Sherman. Contract and specification for building a masonry and earthen dam. N. Y., Engin. news pub. co., n. d.
- 548 — Dunning's dam, near Scranton, Pa. (*In Amer. soc. civ. eng. Trans.* 32: 389–420. pl. 1894.)
 Paging given includes discussion on the subject.
- 549 — Elements of water-supply engineering. pp. 168. il. 8°. N. Y., Engineering news pub. co., 1899. W^G W^C
 Reprinted from articles in *Engineering news*.
 This is in reality a third edition, revised and greatly enlarged, of his Practical hydraulic formulæ. An entirely new third part on Flow of water through masonry conduits has been added.
- 550 — High masonry dams. pp. 88. il. 16°. N. Y., Van Nostrand company, 1897. (Van Nostrand's science ser.) W^G
- 551 — Practical hydraulic formulæ for the distribution of water through long pipes. pp. 61. il. pl. 12°. N. Y., Engineering news pub. co., 1889. W^C
 Taken from *Engineering news*, with corrections and additions.
- * — —; also Notes on water-supply engineering. [Ed. 2.] 8°. N. Y., 1894.
 This work, further revised and enlarged, is published under the title, Elements of water-supply engineering.
- See also, as editor, Jacob, Arthur.
- 552 *Gould, J. M. Treatise on the law of waters, including riparian rights, and public and private rights in waters, tidal and inland. Ed. 2. pp. 932. 8°. Chicago, Callaghan, 1891.
- 553 Gowen, Charles S. Foundations of the new Croton dam. (*In Amer. soc. civ. eng. Proc.* 26: 2–75. il. pl. chart. 1900; with discussion, *Trans.* 43: 469–565. il. pl. chart. 1900.)
- 554 Grad, Charles. Améliorations agricoles et l'aménagement des eaux. pp. 165. 8°. Strasbourg, G. Fischbach, 1885. W^C
- 555 — Habra irrigation reservoir dam in Algeria; [abstract]. (*In Instit. civ. eng. Min. of proc.* 53: 325. 1878.)
 Original paper in *La Nature*, 1878. pt. 1. pp. 249, 299.
- 556 Graëff, Auguste. Mémoire sur l'assainissement et l'irrigation de la plaine du Forez. (*In Ann. des ponts et chaussées: mém. et doc.*, 1871, [semest. 1]. pp. 73–226. pl.)
- 557 — Mémoire sur le mouvement des eaux dans les réservoirs à alimentation variable. pp. 673. pl. 4°. ([Académie des sciences, Paris. v. 21. 1873?]) W^G
- 558 — Mémoire sur les expériences relatives à l'écoulement des eaux, faites au réservoir du Furens. pp. 91. pl. 4°. (Mémoires présentés par divers savants à l'Académie des sciences de l'Institut national de France. v. 28. no. 2.) W^G

Graëff, Auguste—Continued.

- 559 — Mémoire sur les procédés de jaugeage et la solution de quelques questions relatives au régime des réservoirs, étudiés à propos du régime de l'étang de Gondrexange, réservoir du bief de partage des Vosges, au canal de la Marne au Rhin. (*In Ann. des ponts et chaussées: mém. et doc.*, 1856, semest. 2. pp. 129-281. pl.; 1857, semest. 1. pp. 97-106.)
- 560 — Rapport sur la forme et le mode de construction du barrage du gouffre d'Enfer, sur le Furens, et des grands barrages en général. (*In Ann. des ponts et chaussées: mém. et doc.*, 1866, [semest. 2]. pp. 184-211. pl.)
- 561 * — Traité d'hydraulique; précédé d'une introduction sur les principes généraux de la mécanique. 3 v. 4°. Paris, Imprimerie nationale, 1882, 1883.
- 562 Graeve, P. Observations on the movement of water in streams; [abstract]. (*In Instit. of civ. eng. Min. of proc.* 57:352, 353. 1879.)
Original paper in *Civilingenieur*. 25:174.
- 563 Grand canal du Gange. (*In Ann. des ponts et chaussées: mém. et doc.*, 1855, semest. 1. pp. 378-381.)
- 564 Grangent. Notice sur le canal de Beaucaire à Aigues-Mortes, et sur le dessèchement et l'irrigation des marais situés sur la côte méridionale du département du Gard. (*In Ann. des ponts et chaussées: mém. et doc.*, 1832, semest. 1. pp. 106-136. pl.)
- 565 Grantham, Richard Boxall. On arterial drainage and outfalls. (*In Instit. civ. eng. Min. of proc.* 19:53-129. pl. 1860.)
Paging includes discussion on the subject.
- 566 Gras, Scipion. Études sur les torrents des Alpes. (*In Ann. des ponts et chaussées: mém. et doc.*, 1857, semest. 2. 1-96. pl.)
- 567 Gras de Perrodil. Note sur la pratique de l'irrigation sur le versant septentrional de la Montagne-noire. (*In Ann. des ponts et chaussées: mém. et doc.*, 1863, semest. 1. pp. 52-58. pl.)
- 568 * Graves, Walter H. Irrigation and agricultural engineering. pp. 16. 8°. Denver, 1886.
- 569 — Irrigation for Pima Indians. pp. 8. 8°. [Wash., Govt., 1901.] (*U. S.—Interior, Dept. of the—Indian bureau; U. S.—Senate.* 56th Cong. 2d sess. S. doc. 88. *In v. 5.*) W^A
Extract from report of inspector, dated Sept. 12, 1900.
- Great Britain—*Indian famine commission.* See *India—Commission of inquiry on Indian famine.*
- 570 Greathed, W. H. Practice and results of irrigation in northern India. (*In Instit. civ. eng. Min. of proc.* 35:139-185. map. 1873.)
Paging embraces discussion on the paper.
- 571 Greaves, Charles. On evaporation and percolation. (*In Instit. civ. eng. Min. of proc.* 45:19-47. pl. 1876.)
Discussion on the subject follows the paper.

- 572 Grebenau, H. Die internationale Rheinstrom-messung bei Basel vorgenommen am 6.-12. November 1867; ein beitrage zur theorie und praxis der wassermessungen an grösseren flüssen. pp. 85. pl. 17. 4°. München, J. Lindauer, 1873. W^G

Abstract in English of a criticism of this work by K. R. Bornemann in *Civilingenieur*, 23:20, is given in *Instit. of civ. eng., Min. of Proc.* 49:319. 1877.

- 573 *— Theorie der bewegung des wassers in flüssen und canälen nach den auf kosten der Vereinigten Staaten von Nordamerika vorgenommenen untersuchungen des Mississippi stromes und dem berichte Humphreys' und Abbot's. München, 1866.

- 574 Greely, Adolphus Washington. Irrigation and water storage in the arid region; report. pp. 356. maps 37. 4°. Wash., Govt., 1891. (*U. S.—War Dept.—Signal office; U. S.—House of Representatives.* 51st Cong. 2d sess. H. ex. doc. 287. *In v.* 38.) W^A W^G

CONTENTS—Report on the climatology of the arid regions of the United States, with reference to irrigation, by Greely, with appendices containing reports on climate of Arizona New Mexico. California, and Nevada, by W. A. Glassford, and numerous tables of rainfall and temperature throughout this region.

- 575 — Report on the climate of Arizona, with particular reference to questions of irrigation and water storage in the arid region, by Greely and W. A. Glassford. pp. 74. maps. 4°. Wash., Govt., 1891.

Extract from his Irrigation and water storage in the arid region. Contains Report on the climatology of the arid regions, by Greely, and Climate of Arizona, by Glassford, with tables relative to the subject.

- 576 — Report on the climate of California and Nevada, with particular reference to questions of irrigation and water storage in the arid region, by Greely and W. A. Glassford. pp. 219. 4°. maps. Wash., Govt., 1891.

Extract from his Irrigation and water storage in the arid region. Contains Report on the climatology of the arid regions, by Greely, and Climate of California and Nevada, by Glassford, with tables relative to the subject.

- 577 — Report on the climate of Colorado and Utah, with particular reference to questions of irrigation and water storage in the arid region. pp. 70. 4°. maps. Wash., Govt., 1891.

Extract from his Irrigation and water storage in the arid region. Contains Report on the climatology of the arid regions, with tables of rainfall, etc., relative to Colorado and Utah.

Green, E. C. *See*, as joint author, Green, W. J.

- 578 Green, Robert. Address to the nobility, gentry, farmers, and all persons interested in agriculture, on the subject of under-draining wet and cold land by a plough. pp. 49. pl. 8°. Lond., James Ridgway, 1832. W^C

- 579 Green, W. J., and Green, E. C. Subirrigation in the greenhouse. pp. 57-76. 8°. Columbus, State, 1895. (*Ohio agric. exper. sta. Bulletin* 61.) W^A

Greenalch, Wallace. *See*, as joint author, Rafter, George W.

Greene, Charles W. *See*, as joint author, Newlands, Francis J.

Greene, J. S. *See*, as state engineer, 1887-88, Colorado—*Engineer department*, Biennial report.

- 580 Greenleaf, James L. Water power of Huron river. (*In* Lane, A. C. Water resources of lower peninsula of Michigan. pp. 38-41. 1899.)

Extract from *U. S.—Interior, Dept. of the—10th Census, 1880, Report.* 16:493-495. 1885.

- 581 **Gregory, J. W.** [Artesian and subterranean waters and wells of central division, western Kansas, Nebraska, and Indian Territory, etc.] (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 145-172. 1890.)
Contains tables of comparative average values of agricultural lands with and without irrigation.
- 582 — Final report on the mid-plains division of the artesian and underflow investigation: [underwaters of the Great plains]. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 4. pp. 3-50. il. pl. 1892.)
- 583 — Letter in relation to irrigation and reclamation of arid lands; [addressed to Senator P. B. Plumb]. pp. 15. il. 8°. [Wash., Govt., 1889.] (*U. S.—Senate.* 50th Cong. 2d sess. mis. doc. 84.) W^G
With exhibits.
- 584 — Progress report of central division of the Great plains. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Report on progress of irrigation investigation. pt. 1. pp. 145-148. 1891.) W^A
- 585 — Statement. (*In U. S.—House of Representatives—Irrigation of arid lands in the United States, Select committee on.* Ceding arid lands to states and territories. pp. 47-70. 1891.)
- 586 * **Greig, —, and Eyth, Max.** Report on the irrigation of Egypt.
- 587 **Grieve, John.** Farmer's assistant. pp. 111. il. 12°. Edin., Johnstone & Hunter, 1852. W^A
- 588 **Grunsky, Carl Ewald.** Flow of artesian wells. (*In Tech. soc. Pacif. coast. Trans.* 1:178-184. 1884.)
- 589 — Irrigation near Bakersfield, California. pp. 96. il. pl. map. 8°. Wash., Govt., 1898. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 17.) W^A
— — (*U. S.—House of Representatives.* 55th Cong. 2d sess. H. doc. 579. *In v.* 60.) W^A
- 590 — Irrigation near Fresno, California. pp. 94. il. pl. maps. 8°. Wash., Govt., 1898. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 18.) W^A
— — (*U. S.—House of Representatives.* 55th Cong. 2d sess. H. doc. 580. *In v.* 60.) W^A
- 591 — Irrigation near Merced, California. pp. 59. il. pl. map. 8°. Wash., Govt., 1899. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 19.) W^A
— — (*U. S.—House of Representatives.* 55th Cong. 3d sess. H. doc. 220. *In v.* 73.) W^A

Grunsky, Carl Ewald—Continued.

- 592 ——— Method: of applying water to land as practiced in central portions of California. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 1. pp. 307–322. pl. 18. 1892.)
- 593 ——— Notes on artesian water and the effect of irrigation on sub-surface water in the San Joaquin valley. (*In Tech. soc. Pacif. coast. Trans.* 10:157–181. 1893.)
- 594 ——— Water appropriations from Kings river. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 259–325. 1901.)
- 595 ——— We need a department of irrigation engineering at our universities. (*In Tech. soc. Pacif. coast. Trans.* 9:149–153. 1892.)
- 596 Guérard, —. Notice sur les irrigations et le flottage dans l'arrondissement de Saint-Dié. (*In Ann. des ponts et chaussées: mém. et doc.*, 1866) [semest. 1]. 264–297. pl.)
- 597 Guglielmini, Giovanni Domenico. Della natura de' fiumi, trattato fisico-mathematico. 4°. Bologna, 1697.
* ——— ——— Enl. ed. 2 v. Milan, 1852.
- 598 Gulley, Frank A., and Collingwood, C. B. Agricultural development in southwestern Arizona; pumping water for irrigation. pp. 15–24. 8°. Tucson, 1893. (*Ariz. agric. exper. sta. Bulletin* 11.) W^A
- 599 * Gumpenberg-Pöttmes, Joseph von. Der wasserbau an gebirgsflüssen. pl. 4°. Augsburg, 1854.
- 600 * Haag. Das gesetz über die be- und entwässerungs-unternehmungen zum zwecke der bodencultur. München, 1866.
- 601 * Häfener, Franz. Der wiesenbau in seinem ganzen umfange. Ed. 3. Stuttg., 1867.
First edition published in 1855.
- 602 * Hagen, Gotthilf. Handbuch der wasserbaukunst. 4 v. & atlas. 8° & f°. Berl., 1863–65.
* ——— ——— Ed. 2. 4 v. & atlas. 8° & f°. Berl., 1878–81.
- 603 * ——— Untersuchungen über die gleichförmige bewegung des wassers. Berl., 1876.
- 604 [Haggin, J. B.] Desert lands of Kern county, Cal.; affidavits of various residents of said county, also report of B. S. Alexander, G. H. Mendell, and George Davidson. pp. 306. map. 8°. San Francisco, C. H. Street, 1877. W^A W^G
- 605 * Hahn, Oskar. Preussische gesetzgebung über vorfluth, die ent- und bewässerungen und das deichwesen sowie überhaupt in bezug auf das wasserrecht; mit einem anhang, enthaltend provincialgesetze. Ed. 2. 4°. Breslau, 1886.
- 608 Hall, William Ham. Santa Ana canal of the Bear valley irrigation company. (*In Amer. soc. civ. eng. Trans.* 33:61–170. pl. 1895.)
Discussion and correspondence on this paper are given, 33:587–617.

Hall, William Ham.—Continued.

— — —; [abstract]. (*In* *Inst. civ. eng.* *Min. of proc.* 122: 432, 433. 1895.)

— — — *See also*, as state engineer, **California**—*Engineer department*.

609 Hallé, Gustave. Public works of the Orange Free State, South Africa. (*In* *Instit. civ. eng.* *Min. of proc.* 81: 272–278. 1885.)

610 Halsted, Byron D., and Kelsey, J. A. Irrigation of garden crops. pp. 16. il. 8°. [Trenton, State, 1895.] (**N. J. Agricultural college exper. sta.** Bulletin, 115.) W^A

611 Hancock, William A. Some papers on the subject of national aid in the storage of water for the irrigation of the arid west. pp. [10]. 8°. Phoenix, [1901]. W^A

612 * Hanric, A. Travaux d'hydraulique agricole en Algérie; irrigations de la partie et de la plaine de la Mitidja; barrage-réservoir du Hamiz, sa construction et son fonctionnement; canaux principaux d'irrigation, canaux secondaires, mode de distribution des eaux, organization des syndicats, etc. pp. 271. il. pl. 8°. Alger, 1894.

613 Harcourt, Leveson Francis Vernon-. Fixed and movable weirs. (*In* *Instit. civ. eng.* *Min. of proc.* 60: 24–42. pl. 1880.)

Discussion and correspondence upon this paper and the paper following it, Movable dams in Indian weirs, by R. B. Buckley, given, 60: 56–159.

614 — River Seine. (*In* *Instit. civ. eng.* *Min. of proc.* 84: 210–359. il. pl. 1886.)

Paging includes discussion and correspondence on subject.

615 — Rivers and canals; the flow, control, and improvement of rivers, and the design, construction, and development of canals both for navigation and irrigation. Ed. 2, rev. and enl. 2 v. 8°. Oxford, Clarendon press, 1896. W^G W^P W^A

CONTENTS:—V. 1. Rivers.—V. 2. Canals.

616 — Some canal, river, and other works in France, Belgium, and Germany. (*In* *Instit. civ. eng.* *Min. of proc.* 96: 182–201. il. pl. 1889.)

617 — Training of rivers. (*In* *Instit. civ. eng.* *Min. of proc.* 118: 1–46. il. pl. 1894.)

Discussion on the subject given, 118: 78–189.

618 * Harder, P. E. Die theorie der bewegung des wassers in flüssen und canälen. Hamburg, 1878.

619 Hardy, —. Étude sur les endiguements de la Durance dans le département de Vaucluse et dans la commune de Pertuis en particulier. (*In* *Ann. des ponts et chaussées: mém. et doc.*, 1876, semest. 1. pp. 518–538. pl.)

620 Harroun, P. E. Present condition of irrigation and water supply in New Mexico; report. (*In* **N. Mex.**—*Commission of irrigation and water rights.* Report. pp. 21–75. 1899.)

621 Hart, J. H. E. Mutha canals; report. pp. 16. map. f°. [Bombay, 1879.] (**Bombay**—*P. w. d.*—*Irrigation dept.*)

622 Hart, William H. H., *compiler*. District irrigation laws of California; decisions thereon by the supreme court. pp. 75. 8°. Sacramento, State, 1891. W^A W^G

- 623 **Hartley, Charles Augustus.** Description of the delta of the Danube and of the works recently executed at the Sulina mouth. (*In Instit. civ. eng. Min. of proc.* 21:277-308. pl. 1862.)
Paging includes discussion on the subject.
- 624 — On the changes that have recently taken place along the sea coast of the delta of the Danube, and on the consolidation of the provisional works at the Sulina mouth. (*In Instit. civ. eng. Min. of proc.* 36:201-253. pl. 1873.)
Paging includes discussion on the paper.
- 625 — Report to European commission of the Danube, relative to changes that have taken place in the bed of the sea adjacent to the Sulina mouth during a period of twenty-nine years; [translated extract]. (*In Instit. civ. eng. Min. of proc.* 91:334-341. il. 1888.)
- 626 — Survey of the delta of the Danube in 1894: abstract by Leveson Francis Vernon-Harcourt. (*In Instit. civ. eng. Min. of proc.* 122:336-342. il. 1895.)
This abstract is based on a report in French made by **Hartley** in May, 1895, to the European commission of the Danube.
- 627 **Haskell, E. E.** Ritchie-Haskell direction-current meter and the Haskell current meters; instruction in their use by E. E. Haskell. pp. 15. il. 8°. Brookline, Ritchie & sons, 1892.
- 628 * **Haskoll, W. D.** Practice of engineering fieldwork, applied to land and hydraulic, hydrographic, and submarine surveying on water works, sewers, sewage, and irrigation. Ed. 2. pl. 8°. Lond., 1868.
- 629 * **Hasselt, J. van and Koning, — de.** Bevloeuingen in Noord- en Midden-Europa; rapport omtrent eene reis tot bezichtiging van irrigatiënrichtigen . . . 12 Dec. 1887. pp. 109. il. 16 pl. f°. Nijmegen, 1888.
- 630 **Hawksley, T.** River Witham drainage; pumping machinery and works at Lade bank. (*In Instit. civ. eng. Min. of proc.* 34:178-186. 1872.)
Paging embraces discussion on the paper.
- 631 **Haworth, Erasmus.** Underground waters of southwestern Kansas. pp. 65. il. pl. maps. 8°. Wash., Govt., 1897. (U. S.—*Interior, Dept. of—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 6.) W^A
— — (U. S.—*House of Representatives.* 54th Cong. 2d sess. H. doc. 346. In v. 70.) W^A
- 632 **Hay, Robert.** Artesian wells in relation to irrigation in western Kansas. pp. 11. 8°. n. p., [1889].
Prepared for report of Kansas state board of agriculture, August and September, 1889.
- 633 — Final geological reports of the artesian and underflow investigation between the 97th meridian of longitude and the foothills of the Rocky mountains. pp. 209. 8°. Wash., Govt., 1892. (U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 3. pl. maps. 1892.) W^A W^G
For contents, see **United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry.** Final report. pt. 3.

Hay, Robert—Continued.

- 634 ——— Progress report of artesian and underflow investigation. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry. Report on progress of irrigation investigation. pt. 1. pp. 137-144. pl. 1891.*)
- 635 ——— Report [on the geological field work of the artesian wells investigation]. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry. Preliminary investigation, etc. pp. 37-52. il. 1890.*)
- 636 ——— Water resources of a portion of the Great plains. (*In U. S.—Interior, Dept. of the—Geological survey. 16th Annual report, 1894 1895. pt. 2. pp. 535-588. il. pl. maps. 1895.*) W^A
- ———; [separate]. 4°.

Henderson, J. B. See, as hydraulic engineer, Queensland—*Water-supply department.*

- 637 Henny, D. C. Effect of curves in pressure pipes upon the required support. (*In Tech. soc. Pacif. coast. Trans. 10:239-268. il. 1893.*)
- 638 ——— Water pipes built of wooden staves. (*In Tech. soc. Pacif. coast. Trans. 9:33-56. il. 1892.*)
- Paging includes discussion on the subject.

- 639 Henry, D. Farrand. Flow of water in rivers and canals. pp. 86. pl. 8°. Detroit, 1873. W^C
- From Journal of the Franklin institute.

- 640 Hering, R. Flow of water in small channels, after Ganguillet and Kutter, with Kutter's diagram modified, and graphical tables with special reference to sewer calculations. (*In Amer. soc. civ. eng. Trans. 8:1-14. pl. 1879.*)
- Note on Kutter's diagram, by Charles H. Swan, is given, 9:326-328.

- 641 Hérisson, Albert. Draining machinery in the valley of the Po; [abstract]. (*In Instit. civ. eng. Min. of proc. 81:402-403. 1885.*)
- Original paper in *Bulletin de la Société d'encouragement. May, 1885. p. 266.*

- 642 *——— Irrigations de la vallée du Pô. pp. 220. 8°. Paris, Berger-Levrault, 1883.

Taken from annals of the Institut national agronomique, 5th year. Hérisson supplements Nadault de Buffon's account of the Italian canals and gives full description of Cavour canal.

——— ———; [extract]. (*In Victoria—Roy. comm. water supply. Fourth progress report. 1887.*)

- 644 Herschel, Clemens. Gauging of streams. (*In Amer. soc. civ. eng. Trans. 7:236-242. pl. 1878.*)
- Suggestions relative to the form in which the records of the gauging of streams should be finally published.

- 645 ——— Measuring water. pp. 27. il. 8°. Providence, Builders' iron foundry, 1895.
- Address to students of Rensselaer polytechnic institute. Reprinted from the *Polytechnic.*

- 646 ——— On the work done for the preservation of the dam at Holyoke, Mass., in 1885, and on some studies for a new stone dam for the same place. (*In Amer. soc. civ. eng. Trans. 15:543-580. pl. 1886.*)

Herschel, Clemens—Continued.

- 647 — 115 experiments on the carrying capacity of large, riveted metal conduits, up to six feet per second of velocity of flow. Ed. 1. pp. 130. il. pl. 8°. N. Y., Wiley & sons, 1897. W^G W^P W^A

With appendix on water measurements, etc.

- 648 — Problem of the submerged weir. (*In Amer. soc. civ. eng. Trans.* 14:[189]–196. pl. 1885.)

— —; [abstract]. (*In Instit. civ. eng. Min. of proc.* 101: 324. 1890.)

- 649 — Venturi meter. pp. [66]. il. 8°. Providence, [Builders' iron foundry], 1893.

Contains reprint of address before the American society of civil engineers, Dec. 21, 1887.

— —; revised. pp. 42. il. 8°. Providence, [Builders' iron foundry], 1895.

- 650 — Venturi water meter; an instrument making use of a new method of gauging water, applicable to the cases of very large tubes and of a small value only of the liquid to be gauged. (*In Amer. soc. civ. eng. Trans.* 17:228–258. pl. 1887.)

Discussion on this paper is given, 18:133–141. pl. 1888.

— —; [abstract]. (*In Instit. civ. eng. Min. of proc.* 93:515. 1888.)

— See also, as editor, *Frontinus, Sextus Julius*; also, as translator, *Salbach B.*

Hervé-Mangon. See *Mangon, Hervé.*

- 651 * **Hess, August.** Bewässerungsanlagen im südlichen theile der landrostei Luneburg, insbesondere die Müden-Nienhöfer melioration. Hannover, 1883.

- 652 * — Bewässerungsanlagen Oberitaliens. Hannover, 1873.

- 653 * **Heyer, —.** Hannoversche gesetzgebung über ent- und bewässerung der grundstücke. Celle, 1861.

- 654 **Hicks, Lewis E.** Irrigation in Nebraska. pp. 32. 8°. [Lincoln, 1887.] (*Nebr. agric. exper. sta.* [Bulletin 1.]) W^A

- 655 — Stratigraphy and hydrology of Nebraska. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 71–86. il. 1890.)

- 656 — Underflow and sheet waters, irrigable lands, and geological structure of Nebraska, with its effect upon the water supply. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 3. pp. 167–190. map. charts. 1892.)

— —; [extracts]. (*In Nebr.—Labor and industrial statistics, Bureau of.* 3d Biennial report, 1891–92. pp. 457–465. 1892.)

- 657 **Higgin, George.** Irrigation in Spain, chiefly in reference to the construction of the Henares and the Esla canals. (*In Instit. civ. eng. Min. of proc.* 27:483–507. pl. 1868.)

Discussion on irrigation in India and Spain is given, 27:508–552. il. pl.

- 658 Higham, Thomas. Hydraulic tables for finding the mean velocity and discharge in open channels, especially adapted to the most recent formulæ. pp. 68. 8°. Lond., E. & F. N. Spon, 1877. W^P
- 659 Hilgard, Eugene Woldemar. Alkali lands, irrigation and drainage in their mutual relations; revised reprint from reports of the College of agriculture and from report of the 10th United States census, with an abstract of the government report on alkali lands of India. pp. 45. 8°. Sacramento, 1886. (Cal., University of.—*College of agriculture*. Report, 1886. Appendix 7.) W^A W^G W^P
- : second revised reprint. [etc.]. pp. 69. 8°. Sacramento, 1892. (Cal. agric. exper. sta. Report, 1890. Appendix.) W^A W^P
- 660 — Examination of irrigation waters. [Berkeley, 1884.] (Cal. agric. exper. sta. Bulletin 7.) W^A
Published in the California newspapers.
- 661 — Irrigation, drainage, and alkali. [Berkeley, 1886.] (Cal. agric. exper. sta. Bulletin 53.) W^A
Published in the California newspapers.
- 662 — Nature, value, and utilization of alkali lands. pp. 46. il. 8°. Sacramento, State, 1900. (Cal. agric. exper. sta. Bulletin 128.) W^A
Revision of paper in *Yearbook of U. S. Department of agriculture*, 1895, with abstracts from reports and records of California experiment station.
- 663 — Reports of examinations of waters, water-supply, and related subjects, 1886–89. pp. 57. 8°. Sacramento, 1889.
Advanced sheets from the combined reports of the California agricultural experiment station for 1888 and 1889.
- 664 — Rise of the alkali in the San Joaquin valley. pp. 4. 8°. Berkeley, [1889]. (Cal. agric. exper. sta. Bulletin 83.) W^A
— See also, as commissioner, *United States—Agriculture, Department of*, Report on climatic and agricultural features, etc.
- 665 — and Loughridge, R. H. Conservation of soil moisture and economy in the use of irrigation waters. pp. 12. il. pl. 8°. Berkeley, 1898. (Cal. agric. exper. sta. Bulletin 121.) W^A
- 666 — and Loughridge, R. H. Distribution of the salts in alkali soils. pp. 14. il. 8°. Berkeley, 1895. (Cal. agric. exper. sta. Bulletin 108.) W^A
- 667 Hill, Ernest Prescott. Fissures in masonry dams. — (In *Instit. civ. eng. Min. of proc.* 129:350–362. 1897.)
- 668 Hill, John W. Masonry dam, [Eden reservoir at Cincinnati]. (In *Amer. soc. civ. eng. Trans.* 16:261–282. pl. 1887.)
Paging includes discussion on subject.
- 669 Hill, Robert Thomas. Imbibition of rocks. (In *U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Report on progress of irrigation investigation. pt. 1. pp. 213–221. 1891.)

Hill, Robert Thomas—Continued.

- 670 — Occurrence of artesian and other underground waters in Texas, eastern New Mexico, and Indian Territory, west of the 97th meridian. (*In U. S.—Agriculture, Dept. of—Artesian and overflow investigation and irrigation inquiry.* Final report. pt. 3. pp. 41-166. map. charts. 1892.)
- 671 — and Vaughan, T. W. Geology of Edwards plateau and Rio Grande plain adjacent to Austin and San Antonio, Texas, with reference to occurrence of underground waters. (*In U. S.—Interior, Dept. of the—Geological Survey.* 18th Annual report, 1896/97. pt. 2. pp. 193-321. il. pl. maps. 1898.)
- —; [separate]. 4°.
- 672 Hinton, Richard J. Brief memorandum of the decisions of the federal, state, and territorial courts upon questions relative to the use and control of water in arid region of the United States. (*In his* *Irrigation in the United States.* Ed. 2. pp. 329-358. 1890.)
- Enlarged from *U. S.—Interior, Dept. of the*, Digest of the decisions, etc.
- 673 — Facts and conditions relating to irrigation in various countries. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 1. pp. 375-427. 1892.)
- 674 — Irrigation in Australia; recent investigation, legislation, and administration by the colonies of Victoria and New South Wales. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Report on progress of irrigation. pt. 1. pp. 235-293. 1891.)
- 675 — Irrigation in the United States; [its extent and methods, with digest of laws governing water supply]. pp. 240. maps. 8°. Wash., Govt., 1887. (*U. S.—Agriculture, Dept. of.*) W^G
- — (*U. S.—Senate.* 49th Cong., 2d sess. S. mis. doc. 15. *In v.* 1.) W^A W^G
- For contents, see *United States—Agriculture, Department of*, Irrigation in the United States.
- — Ed. 2, [rev.]. pp. 386. 8°. Wash., Govt., 1890. (*U. S.—Senate.* 51st Cong. 1st sess. S. rp. 928, pt. 6. *In v.* 6.) W^A
- This revised edition was prepared by order of *United States Senate Special committee on irrigation and reclamation of arid lands*, in whose report it forms part 6.
- For contents, see *United States—Senate—Irrigation and reclamation of arid lands, Select Committee on*, Report. pt. 6.
- 676 — Progress report on irrigation in the United States. pp. 337. pl. map. 8°. Wash., Govt., 1891. (*U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Report on progress of irrigation investigation, etc. pt. 1.) W^A W^G
- For contents, see *United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry*, Report on progress of irrigation investigation. pt. 1.
- 677 — Report on irrigation and cultivation of the soil thereby, with physical data, conditions, and progress within the United States for 1891; accompanied by maps, illustrations, and papers.

Hinton, Richard J.—Continued.

pp. 459. pl. maps. 8°. Washington, Govt., 1892. (U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry. Final report. pt. 1.*) W^A W^G

For contents, see **United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry, Final report. pt. 1.**

— —: [short extracts]. (In **Nebr.—Labor and industrial statistics. Bureau of.** 3d Biennial report, 1891–92. pp. 429–446. 1892.) W^A

678 — Statement. (In **U. S.—Senate—Irrigation and reclamation of arid lands, Select committee on.** Report. pt. 5. pp. 95–106. 1890.)

— See also, as joint author, **Newlands, Francis Griffith**; also as special agent in charge. **United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry.**

679 **Hitchcock, E. A.** Statement on irrigation submitted [to Committee on public lands]. (In **U. S.—House of Representatives—Public lands, Committee on.** Hearings. pp. 74–76. pl. 1901.)

680 * **Hobohm, Heinrich.** Grundzüge für die beseitigung der ueberschwemmungen mit gleichzeitiger durchführung der künstlichen bewässerung nach einem neuen systeme. Wien, 1877.

681 **Holm, G. B. A.** Lag om dikning och annan afledning af vatten pp. 37. 12°. Stockholm, Kongl. boktryckeriet, 1879. (Samling af k. förordningar. Stadganden m. m. 16.) W^A

682 **Holter, George L., and Fields, John.** Analyses of waters for irrigation. pp. 7. 8°. Stillwater, 1899. (**Okla. agric. exper. sta. Bulletin 38.**) W^A

683 — Study of waters for irrigation: irrigation plant. pp. 14. 8°. Stillwater, 1897. (**Okla. agric. exper. sta. Bulletin 29.**) W^A

684 **Home, F.** Tank irrigation in Ajmere and Mhairwara; report. (In **Professional papers on Indian engineering. 6:** 148–164. pl. 1869.)

685 **Home, Frederick J.** Report on the prospects of irrigation and water conservation in New South Wales. pp. 29. maps 4. charts 18. f°. Sydney, Govt., 1897. (**N. S. W.—Legislative assembly.** 1897.) W^A

Considers the conditions of the principal river basins and other drainage areas, following the system adopted in **N. S. W.—Royal commission on conservation of water, First report.** 1885.

686 **Hood, Ozni Porter.** New tests of certain pumps and water lifts used in irrigation. pp. 91. il. pl. 8°. Wash., Govt., 1898. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water supply and irrigation papers. 14.) W^A

— — (U. S.—*House of Representatives.* 55th Cong. 2d sess. H. doc. 509. In v. 60.) W^A

687 * **Horsley, Stephen.** Travancore irrigation, and an account of the opening of the Pandian caul headworks, 1885. 8°. Madras, 1885.

* **Horsley, Stephen**—Continued.

— —; [extract, entitled] Restoration and enlargement of ancient irrigation works in Travancore. (*In Instit. civ. eng. Min. of proc.* 84:485-487. 1886.)

- 688 **Horton, Robert E.** Report on run-off and water power of Kalamazoo river. (*In Lane, A. C. Water resources of lower peninsula of Michigan.* pp. 22-38. 1899.)

— — See also, as joint author, **Rafter, George W.**

Horton, Theodore. See, as joint author, **Swan, Charles H.**

- 689 **Hotson, John B.** Upper Darling (Barwan) survey; [4 reports of engineer-in-charge]. (*In N. S. W.—Roy. comm. conservation of water.* Third and final report. Appendix, pp. 11-15. 1887.)

Houghton, J. F. See **California—Surveyor-general.**

- 690 **Howden, Andrew Cassels.** Floods in the Nerbudda valley, with remarks on monsoon floods in India generally. (*In Instit. civ. eng. Min. of proc.* 27:218-228. pl. 1868.)

Discussion on fresh-water floods of rivers, 27:229-273.

- 691 **Howe, Malverd A.** Retaining walls for earth; theory as developed by J. J. Weyrauch, expanded and supplemented by practical examples, with notes on later investigations. pp. 64. il. 12°. N. Y., Wiley and sons, 1886. W^C W^G W^P

— —; including the theory of earth pressure as developed from the ellipse of stress. Ed. 2, rev. and enl. pp. 136. il. 12°. N. Y., Wiley & sons, 1891. W^G W^C

With appendix presenting the theory of Weyrauch.

— — Ed. 3, rev. and enl. pp. 132. il. 12°. N. Y., Wiley & sons, 1896. W^G W^C W^P

Appendix of 2d edition replaced by a treatise on foundations, illustrated with examples from practice.

- 693 **Hubbell, Ira C.** Pumping machinery for irrigation. pp. 19. 24°. Kansas City, Fairbanks, Morse & co., 1894.

Paper read before the **Inter-state irrigation association**, Omaha convention, March, 1894.

Hudson reservoir and canal company. See **United States—House of Representatives—Indian affairs, Committee on.**

- 694 **Hugues, Carlo.** Irrigazione montana. pp. 129. il. 8°. Milano, Ulrico Hoepli, 1888. W^G W^P

- 695 **Humphreys, A. A., and Abbot, H. L.** Report upon the physics and hydraulics of the Mississippi river, upon the protection of the alluvial region against overflow, and the deepening of the mouths based upon surveys and investigations made under acts of Congress, etc. pp. 456+cxlvi. pl. 20. f°. Phila., J. B. Lippincott & co., 1861. (*U. S.—War Dept.—Topographical engineers, Bureau of.* Professional papers. no. 4. 1861.) W^G W^P

— —; [notes by J. C. Anderson]. (*In Professional papers on Indian engineering.* 5:165-194. 1868.)

- * — —; [reviewed] by Edwin Hale Abbott. pp. 42. 8°. Boston, Crosby & Nichols, 1862. W^C

Reprinted from the **North American review**, April, 1862.

- 696 *Huston, Harvey. Right of appropriation and the Colorado system of laws in relation to irrigation. 8°. Denver, Chain & Hardy, 1894.
- 697 Hutchinson, Henry. Practical drainage of land. pp. 207. pl. 4. 8°. Lond., Houlston & Stoneman, 1844. W^A W^P
- 698 Hutson, William Ferguson. Irrigation systems in Texas. pp. 68. il. pl. 8°. Wash., Govt., 1898. (U.S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 13.) W^A
- — — (U.S.—*House of Representatives.* 55th Cong. 2d sess. H. doc. 477. *In v.* 60.) W^A
- 699 Hutton, William R. On the determination of the flood discharge of rivers and of the backwater caused by contractions. (*In Amer. soc. civ. eng. Trans.* 11:211–241. pl. 1882.)
- Ibarrola, José Ramón de. *See* Ramón de Ibarrola, José.
- 700 Idaho—*Engineer department.* Biennial report of the state engineer to the governor of Idaho, for the years 1899–1900. pp. 101. pl. maps. 8°. Boise, State, [1900].
D. W. Ross, state engineer.
- 701 — *Legislature.* Irrigation laws of Idaho. pp. 57. 8°. n. p., [1895].
- 702 Idaho state irrigation committee. Idaho, the gem of the mountains; [report and papers for the] Fourth national irrigation congress, Albuquerque, N. Mex., 1895. pp. 31. 8°. [Boise City, 1895.]
- Idaho water company. *See* Foote, A. D., Report.
- 703 Improvement and irrigation of the plain of Forez [France]; [abstract]. (*In Instit. civ. eng. Min. of proc.* 54:304. 1878.)
Original paper, Notices sur les modèles, cartes et dessins relatifs aux travaux des ponts et chaussées, Exposition universelle à Paris, 1878. p. 36.
- 704 India—[*Commission of inquiry on Indian famine*]. Report of the Indian famine commission. [2 v.] f°. Lond., 1880, 1885. W^A
- CONTENTS—[v. 1], pt. 1. Famine relief. [v. 1], pt. 2. Measures of protection and prevention.—[v. 2], pt. 3. Famine histories.
- — —; appendix. [v.] 1–5. f°. Lond., 1881, 1882. W^A
- Contains miscellaneous papers, proceedings of the commission, minutes of evidence, etc. Appendix 5 is entitled Irrigation as a protection against famine. Contains reports from the different provinces of India.
- 705 — *Public works department.* Drainage and irrigation of the Terraie; abridged from report by C. S. Thomason, superintendent of Terraie irrigation. (*In Professional papers on Indian engineering.* 1:422–436. 1864.)
- 706 — — Failure of the Kali Nadi aqueduct, Lower Ganges canal. pp. 51. pl. maps. Calcutta, Govt., 1888.
- — —; abstracted by W. H. Thelwall. (*In Instit. civ. eng. Min. of proc.* 95:283–290. 1888.)
Reports in *Selections from the records of Government of India.* no. 240. 1888.
- 708 — — Irrigation; review of the revenue report of irrigation and navigation works in Bengal for 1897–98. pp. 3. f°. [Simla, Govt., 1899.] (C. W. I. no. 247.) W^A

India—*Public works department*—Continued.

- 709 ——— Irrigation works of India; statistical review of the financial and agricultural results obtained from them in 1887–88. pp. 21. tables. 8°. Calcutta, Govt., 1889.
- 710 ——— Papers connected with the Betwa canal project in the North-Western Provinces. pp. 147. pl. maps. f°. Calcutta, Govt., 1887. (Selections from records of Govt. of India, Public works dept. no. 232. P. W. D. serial no. 12.)
- 711 ——— Papers connected with the Periar irrigation project in Madras. pp. 85. pl. map. f°. Calcutta, Govt., 1886. (Selections from records of Govt. of India, Public works dept. no. 215. P. W. D. serial no. 2.)
- 712 ——— Papers relating to the Palar anicut system. pp. 30. pl. f°. Calcutta, Govt., 1886. (Selections from records of Govt. of India, Public works dept. no. 219. P. W. D. serial no. 8.)
- 713 ——— Papers relating to the Sidhnai canal project in the Punjab. pp. 43. pl. f°. Calcutta, Govt., 1888. (Selections from records of Govt. of India, Public works dept. no. 248. P. W. D. serial no. 17.)
- ; [abstract]. (*In Instit. civ. eng.* Min. of proc. 103:264–267. 1891.)
- 714 ——— Papers relating to water-supply schemes in India, major works. 2 v. pl. maps. f°. Calcutta, Govt., 1889. Selections from records of Govt. of India, Public works dept. nos. 251 and 252. P. W. D. serial nos. 18 and 19.)
- 715 ——— Report connected with the Zhara Karezi irrigation scheme, Beluchistan. pp. 11. pl. f°. Calcutta, Govt., 1887. (Selections from records of Govt. of India, Public works dept. no. 231. P. W. D. serial no. 11.) W^G
- 716 ——— Sutlej canal, project for an irrigation canal from the river Sutlej; abridged report by James Crofton. (*In Professional papers on Indian engineering.* 2:145–173; 214–241. pl. map. 1865.)
- *See also* Bengal.—Bombay Presidency.—Burma.—North West Provinces.—North West Provinces and Oudh.—Punjab.
- 717 Institution of civil engineers. Minutes of proceedings . . . with other selected and abstracted papers. v. 1–143. 8°. Lond., 1842–1901. W^G W^C
v. 1 covers the sessions 1837–1841, and bears imprint date 1842; session 1837 is a reprint (1848) of the 1837 edition.
Papers of this society are also issued separately as *Excerpt minutes*, edited by James Forrest, Such papers as relate to irrigation are entered in this list under their respective authors.
- 718 ——— Transactions. v. 1–3. 4°. Lond., 1836–1842. W^C
Continued under the title *Minutes of proceedings*. See preceding entry.
Such papers as relate to irrigation are entered in this list under their respective authors.
- 719 International commission on the investigation into the distribution of the waters of the Rio Grande, Aug. 17, 1896. Correspondence and proceedings of commission. (*In U. S.—State, Dept. of.* Equitable distribution of the waters of the Rio Grande. pp. 31–46. 1901.)

- 720 **International irrigation congress.** Irrigation in southern California; by Harry Ellington Brook. pp. 48. il. 12°. Los Angeles printing co., 1893. W^A W^C
 Issued for the use of delegates to the Congress, Los Angeles, Cal., Oct. 10-15, 1893.

— *See also* **National irrigation congress.**

- 721 **International water boundary commission.** Treaties of 1884 and 1889; special report of U. S. Commission covering special report of the joint commission on the Bancos . . . on the lower Rio Grande, with evidence taken and maps of the surveys made in each case. pp. 38+[1]. maps. 8°. [Wash., Govt., 1895.]
 Evidence is recorded in English and Spanish.

- 722 **Interstate irrigation association.** Proceedings, 1893, 1894. 8°. Salina, Kans., 1893; Omaha, Nebr., 1894.

- 723 **Irish, Charles W.** Climate, soil characteristics, and irrigation methods of California. (*In* U. S.—*Agriculture, Dept. of.* Yearbook, 1895. pp. 475-486. il. pl. 1896.) W^A

— —; [separate]. 8°.

- 724 — Report on artesian water in Nevada. (*In* U. S.—*Agriculture, Dept. of*—*Artesian and underflow investigation and irrigation inquiry.* Report on progress of irrigation investigation. pt. 1. pp. 199-206. 1891.)

— *See also*, as special agent in charge, 1893-1895, **United States—Agriculture, Department of**—*Irrigation inquiry, Office of.*

- 725 **Irrigation, Board of, Executive departments.** Preliminary report. pp. 32. 8°. Wash., Govt., 1896. (U. S.—*Senate.* 54th Cong. 1st sess. S. doc. 36. *In* v. 3.)

This board was established by the Secretaries of the Interior and of Agriculture and consisted of officers from these departments.
 Contains existing legislation relative to irrigation and bibliography of official reports on irrigation

Irrigation congress. *See* **National irrigation congress.**

- 726 **Irrigation in California, the San Joaquin and Tulare plains, a review of the whole field.** pp. 22. 8°. Sacramento, 1873. W^G

- 727 **Irrigation in the Alps; [abstract].** (*In* *Instit. civ. eng.* Min. of proc. 77:423-425. 1884.)

Original article in *Bulletin de la Société vaudoise des ingénieurs et des architectes*, 1883. p. 49.

- 728 **Irving, W.** Duty of water under Gage canal, Riverside, Cal. (*In* U. S.—*Agriculture, Dept. of*—*Experiment stations, Office of.* Use of water in irrigation; report. pp. 131-148. pl. map. 1900.)

— — (*In* U. S.—*Agriculture, Dept. of*—*Experiment stations, Office of.* Use of water for irrigation in Texas. pp. 131-148. pl. map. 1901.)

- 729 **Italy—Agricoltura, industria e commercio, Ministero di—Agricoltura, Direzione generale dell.** Le acque sotterranee dei Colli Laziale. (*In* **Italy—Agricoltura, industria e commercio, Ministero di—Agricoltura, Direzione generale dell.** Lazio. pp. 75-121. 1892.)

Italy—*Agricoltura, industria e commercio, Ministero di—Agricoltura, Direzione generale dell'—Continued.*

- 730 ——— L' Aniene. Text & atlas [2 v.]. 4°. Roma, 1891. (Carta idrografica d' Italia. 4.) W^A
- 731 ——— Atti della commissione idraulica; verbali delle adunanze, 1890, 1891. pp. 117. 4°. Roma, 1892. (Carta idrografica d' Italia. 9.) W^A
- 732 ——— Cenni sulle bonificazioni nelle provincie Venete ed in quella di Mantova. pp. 162. maps. chart. 4°. Roma, 1892. (Carta idrografica d' Italia. 11.) W^A
- 733 ——— Cisterne ed acque piovane. pp. 67. pl. 16. Roma, Govt., 1887. 8°. (Annali di agricoltura, 1887. 122.) W^A W^G
- 734 ——— Emilia; relazioni della Commissione ministeriale. pp. 70. 4°. Roma, 1888. (Carta idrografica d' Italia. [1.]) W^A W^G
- 735 ——— Emilia; relazioni [delle Commissioni provinciali]. pp. xi + 279. 4°. Roma, 1888. (Carta idrografica d' Italia. 2.) W^A
- 736 ——— Inondazioni della regione veneta nel 1882 in rapporto al diboscamento dei monti e gli effetti delle briglie e delle serre, specialmente nella provincia di Sondrio. pp. 143. 8°. Roma, Govt., 1883. (Annali di agricoltura, 1882. 59.) W^A W^G
- 737 ——— Irrigazione del Piemonte; canali demaniali d' irrigazione nelle provincie di Torino, Novara, Pavia ed Alessandria. pp. 79. 4°. Roma, 1891. (Carta idrografica d' Italia. 5.) W^A
- 738 ——— Irrigazione della provincia di Bergamo. pp. 206. 4°. Roma, 1891. (Carta idrografica d' Italia. 6.) W^A
- 739 * ——— Irrigazione della provincia di Mantova. 4°. Roma. (Carta idrografica d' Italia. 8.)
- 740 ——— Irrigazioni e laghi artificiali della Spagna; relazione degli ingegneri Giuseppe Zoppi e Giacomo Torricelli. Text & plates [2 v.]. Firenze, 1888. (Annali di agricoltura, 1888. 141.) W^A W^G
- 741 * ——— Irrigazioni nell' Egitto. Roma, 1892. (Carta idrografica d' Italia. 13.)
- 742 ——— Laghi artificiali dell' Algeria, della Francia e del Belgio; relazione degli ingegneri Giuseppe Zoppi e Giacomo Torricelli. Text & plates [2 v.]. 8°. Roma, 1886. (Annali di agricoltura, 1886. 106.) W^A W^G
- 743 ——— Lazio. pp. 137. map. 4°. Roma, 1892. (Carta idrografica d' Italia. 12.) W^A
- 744 ——— Liri-Garigliano, paludi Pontine e Fucino. Text & atlas [2 v.]. 4°. Roma, 1895. (Carta idrografica d' Italia. 20.) W^G
- 745 ——— Nera e Velino. Text & atlas [2 v.]. 4°. Roma, 1892. (Carta idrografica d' Italia. 14.) W^A

Italy—*Agricoltura, industria e commercio, Ministero di—Agricoltura, Direzione generale dell'—Continued.*

- 746 — — — Norme per gli ingegneri incaricati dell'estensione di progetti preliminari di grandi serbatoi. pp. 38. il. 8°. Roma, Govt., 1886. W^G
- 747 — — — Regione meridionale adriatica; relazioni [delle Commissioni provinciali]. pp. 251. 4°. Roma, 1892. (Carta idrografica d'Italia. 10.) W^A
- 748 — — — Regione meridionale mediterranea; relazioni [delle Commissioni provinciali]. pp. 555. 4°. Roma, 1890. (Carta idrografica d'Italia. 3.) W^A
- 749 — — — Relazioni [delle Commissioni provinciali] Lombardia. pp. 565. 4°. Roma, 1896. (Carta idrografica d'Italia. 24.) W^G
- 750 — — — Relazioni delle Commissioni provinciali, Veneto. pp. 413. 4°. Roma, 1897. (Carta idrografica d'Italia. 25.) W^G
- 751 — — — Sicilia; relazioni [delle Commissioni provinciali]. pp. v+217. 4°. Roma, 1891. (Carta idrografica d'Italia. 7.) W^A
- 752 — — — Tevere. Text & atlas [2 v.]. 4°. Roma, 1899. (Carta idrografica d'Italia. 26.) W^G
- 753 — — — Volturno. Sarno-Tuscano, 1896. pp. 139. map. pl. 4°. Roma, 1896. (Carta idrografica d'Italia. 23.) W^G
- 754 — — *Commissione idraulica.* Acque sotterranee del Tavoliere di Puglia. pp. 23. il. f°. n. p., [1887?] W^G
- 755 — — — Irrigazione del Campidano di Cagliari. [Sardegna]. pp. 54. il. map. f°. n. p., [1887?] W^G
Report of the engineer, A. Filonardi, is included.
- 756 — — — Irrigazione delle Puglie, serbatoio di Monticchio sull'Ofanto. pp. lvi+107. f°. [Roma, 1886.] W^G
Includes report by Emilio Cortese.
- 757 — — — Irrigazione mediante serbatoi in Sicilia; relazione alla commissione idraulica, sul progetto di massima dell'Ing^{re} Travaglia. pp. lxxxiv+163. tables. f°. n. p., [1887]. W^G
Report of the engineer is included.
- 758 — — — Progetto preliminare di sbarramento del Tidone al Rio Molato presso Caminata. pp. 29. pl. f°. n. p., [1887?] W^G
- 759 — — — Progetto preliminare di sbarramento del torrente Baganza alla stretta di Ronzanoefra, Calestano e Marzolana. pp. 29. pl. f°. n. p., [1887?] W^G
- 760 — — — Sardegna, progetto di derivazione e di un serbatoio sul Tirso per l'irrigazione del Campidano di Oristano; [relazione]. pp. xxvii+57. pl. map. f°. [Roma, 1887.] W^G
- 761 — — *Finanze, Ministero delle—Demanio e delle tasse, Direzione generale del—Canali demaniali d'irrigazione, Amministrazione dei.* Canale Cavour ed il suo esercizio promiscuo coll'esercizio dei canali derivati dalla Dora Baltea, dalla Sesia e dal Ticino; [per Carlo Sospizio]. pp. 13. 8°. [Torino, 1884.]

Italy—*Finanze, Ministero delle—Demanio e delle tasse, Direzione generale del—Canali demaniali d'irrigazione, Amministrazione dei—Continued.*

- 762 ———— Tariffacapitolato per le concessioni d'acqua nel periodo 1877–1883, approvata con decreto ministeriale del 12 dicembre 1876. pp. 12. 8°. [Roma, 1876.]

- 763 ———— *Lavori pubblici, Ministero dei—Opere idrauliche, Direzione generale delle.* Relazione sui servizi idraulici pel biennio finanziario 1884–86. pp. 396. f°. Roma, 1887. W^c

Jack, Robert L. *See, as government geologist, Queensland—Geological survey.*

- 764 Jackson, Louis D'Aguilar. Hydraulic manual. [Ed. 3.] [2 v. in 1.] 8°. Lond., Allen & co., 1875. W^G W^P

CONTENTS.—v. 1. Working tables and explanatory text, intended as a guide in hydraulic calculations and field operations.—v. 2. Hydraulic statistics and Indian meteorological statistics for the use of engineers.

- 765 ———— Statistics of hydraulic works and hydrology of England, Canada, Egypt, and India. pp. 538. 8°. Lond., Thacker & co., 1885. W^G W^P

This volume is to a certain extent an enlargement of pt. 2 of his Hydraulic manual, 3d edition, 1875, with additions of later date.

——— *See, as translator, Kutter, Wilhelm R.*

- 767 * Jacob, Arthur. Designing and construction of storage reservoirs. pp. 95. il. pl. 16°. N. Y., 1873. (Van Nostrand's science ser.)

- 768 ————; revised and extended by E. Sherman Gould. pp. 137. il. 16°. N. Y., D. Van Nostrand, 1888. (Van Nostrand's science ser.)

* ———— Ed. 2. N. Y., 1897.

- 769 Jacob, Samuel Swinton. Water supply of Jeypore, Rajputana. (*In* Instit. civ. eng. Min. of proc. 115: 53–62. pl. 1894.)

Jacquet, L. *See* Merrill, William E., *translator.*

- 770 James, I. E. Reports of James and Richard H. Stretch on the practicability of turning the waters of the Gulf of California into Colorado deserts and Death valley. pp. 7. 8°. [Wash., Govt., 1874.] (U. S.—Senate. 43d Cong. 1st sess. S. mis. doc. 84. *In* v. 1.)

James, J. E. *See* James, I. E.

Janicki, S. *See* Merrill, William E., *translator.*

- 771 *Jaubert de Passa, Jacques François. De l'arrosage dans le département des Pyrénées-Orientales et des droits des arrosants sur les eaux. Paris, 1848.

- 772 * ———— Recherches sur les arrosages chez les peuples anciens. 4 v. Paris, 1846–1847.

- 773 ———— Voyage en Espagne dans les années 1816–1819; ou, Recherches sur les arrosages, sur les lois et coutumes qui les régissent, sur les lois domaniales et municipales, considérés comme un puissant moyen de perfectionner l'agriculture française. 2 v. 5 pl. map. 8°. Paris, Huzard, 1823. W^G

- 774 **Jeffreys, W.** Manufacture of irrigation pipes [and their adoption by the Irrigation department, North West Provinces]. (*In Professional papers on Indian engineering.* 3:272-277. pl. 1866.)
- 775 — On the proper alignment of rajbubas, or canal distributaries. (*In Professional papers on Indian engineering.* 4:330-336. 1867.)
- 776 ***Jijemski.** —. Irrigations dans la province du Zérafchane, [Turkistan]. 1885.
- 777 **Jilinsky, J.** Short sketch of the work of canalization of Polesié, marshes of Pinsk in western Russia, under the superintendence of Lieut.-Gen. Jilinsky, from 1873 to 1892. pp. 11. 8°. St. Petersburg, 1893.
Imprimé par ordre du Ministre des domaines.
- 778 — Short sketch of the work of irrigation in the south of Russia, under the superintendence of Lieut.-Gen. Jilinsky, from 1880 to 1892. pp. 13. 8°. St. Petersburg, 1893.
Imprimé par ordre du Ministre des domaines.
- 779 **Johnson, A. A.** Reclamation of arid lands; Harvey water motor, [a new invention for irrigation purposes]. pp. 47-72. il. 8°. Laramie, 1894. (**Wyo. exper. sta.** Bulletin 18.) W^A
- 780 **Johnson and Stokes, compilers.** Irrigation by cheap modern methods. pp. 62. il. pl. 12°. Phila., Johnson & Stokes, 1898. W^C
- 781 **Johnston, Clarence T.** Computation of discharge records and preparation of diagrams. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 47-82. pl. 1900.)
— — (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation. pp. 47-82. pl. 1901.)
- 782 — Duty of water in Wyoming. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 171-174. pl. map. 1900.)
— — (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Duty of water in Nebraska. pp. 171-174. pl. map. 1901.)
— Use of water in irrigation, report of investigation made in 1899. See **United States—Agriculture, Department of—Experiment stations, Office of.**
- 783 — and **Breckons, J. A.** Water-right problems of Bear river. pp. 40. pl. map. 8°. Wash., Govt., 1899. (*U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Bulletin 70.) W^A
- CONTENTS—Water supply of Bear river and its diversion; by **Johnston.**—Interstate water rights in Bear river, by **Breckons.**
- 784 — and **Stannard, J. D.** Practical irrigation. (*In U. S.—Agriculture, Dept. of.* Yearbook, 1900. pp. 491-512. il. 1901.)
— —; [separate]. 8°.

- 785 **Johnstone, John.** Account of the mode of draining land, according to system practised by Mr. Joseph Elkington; drawn up for consideration of Board of agriculture. Ed. 4, enl. pp. 211. pl. 19. 8°. Lond., B. & R. Crosby & co., 1814. W^A
 ——— New ed. pp. 118. pl. 19. 8°. Lond., M. Taylor, 1841. W^P W^C
- 786 ——— Systematic treatise on the theory and practice of draining land, etc., according to the most approved methods; and adapted to the various situations and soils of England and Scotland; also, on sea, river, and lake embankments, formation of ponds and artificial pieces of water, etc. Ed. 3, enl. pp. 250. pl. 4°. Edinburgh, University press, 1834. W^G
- Joint commission on investigation into distribution of waters of Rio Grande, Aug. 17, 1896.** *See* International commission on the investigation into the distribution, etc.
- 787 **Joly, Ch.** Note sur les orangeries et les irrigations de Blidah, [Algérie]. pp. 19. il. size. 8°. Paris, Georges Chamerot, 1887. W^A
- 788 [**Jones, J. H.**] System of drainage tables calculated for the use of township officers, contractors, land owners, and all other persons interested in drainage works. pp. 100. 12°. Detroit, 1888. W^C
 These tables show the cubic yards in 1 rod of every dimension of drain, from 1 foot to 10 feet in depth.
- 789 **Jones, John Alfred.** Waterworks of the Madras Presidency. (*In* *Instit. civ. eng.* Min. of Proc. 137:2-71. pl. 1899.
 Paging includes discussion and correspondence on the subject.
- Jones, T. C.** *See*, as commissioner, **United States—Agriculture, Department of.** Report on climatic and agricultural features and needs of arid regions.
- 790 **Joyce, Frederick Talbot.** Queensland water supply. (*In* *Instit. civ. eng.* Min. of Proc. 107:305-315. pl. 1892.)
- 791 **Kaiser, Otto.** Beiträge zur pflege der bodenwirthschaft mit besonderer rücksicht auf die wasserstandsfrage. pp. 123. pl. 21. 8°. Berl., 1883. W^A
- 792 **Kansas—Forestry and irrigation, Commissioner of.** Biennial report of the commissioner of forestry and irrigation, 6th. pl. 8°. Topeka, State, 1899.
 Commissioner, E. D. Wheeler.
- 793 ——— *Irrigation survey and experiment, Board of.* Report of the Board of irrigation survey and experiment for 1895 and 1896, to the legislature of Kansas. pp. 238. pl. maps. 8°. Topeka, State, 1897. W^A
 Members of the board—D. M. Frost, Wm. B. Sutton, M. B. Tomblin, Geo. T. Fairchild, Erasmus Haworth.
- 794 **Kansas agricultural experiment station—Horticultural department.** Small fruit culture by irrigation. pp. 125-148. il. pl. 8°. Manhattan, 1895. (Bulletin 55.) W^A
 S. C. Mason, professor of horticulture; F. C. Sears, assistant.

- 795 **Kansas irrigation association.** Proceedings, 1893, 1894. pl. 8°. [Topeka, 1893], Hutchinson, 1894. W^A W^G
 Wichita convention, Nov. 22 and 23, 1893; 2d annual convention at Hutchinson, Nov. 23 and 24, 1894.
- 796 **Keelhoff, J.** *Traité pratique de l'irrigation des prairies.* Ed. 2, enl. Text & atlas [2 v.]. 8°. Louvain, D. Aug. Peeters-Ruelens, 1888. W^A W^G W^P
- Kelsey, J. A.** *See*, as joint author, **Halsted, Byron D.**
- 797 **Kennedy, Robert Greig.** Prevention of silting in irrigation canals. (*In* *Instit. civ. eng.* Min. of proc. 119:281-290. 1895.)
- 798 **Kenney, A. J.** Irrigation guide; a concise treatise on irrigation, designed for the practical farmer. pp. [19]. 24°. Livingston, Montana, 1895. W^C
- 799 ***Kennison, Robert L.** Irrigation in Utah. Wash., 1871.
- 800 **Kindermann, Fr.** Connection between the heading-up due to weirs and the surface-fall according to measurements in the Nile; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 91:518, 519. 1888.)
 Original paper in *Wochenschrift des österreichischen ingenieur-und architekten-vereins.* pp. 214-216. 1887.
- 801 **King, Franklin Hiram.** Irrigation and drainage; principles and practice of their cultural phases. pp. 502. il. 12°. N. Y., Macmillan co., 1899. (*Rural science ser.*) W^A W^G W^P W^C
- 802 — Irrigation in humid climates. pp. 27. il. 8°. Wash., Govt., 1896. (*U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Farmers' bulletin 46.) W^A
- 803 — Principles and conditions of the movements of ground water. (*In* *U. S.—Interior, Dept. of the—Geological survey.* 19th Annual report, 1897-98. pt. 2. pp. 59-294. il. pl. 1899.) W^A
- —, [separate with], Theoretical investigation of motion of ground waters; by Charles Sumner Slichter. pp. 59-384. il. pl. 4°. Wash., Govt., 1899.
- 804 **Kinney, Clesson S.** Treatise on the law of irrigation; including the law of water-rights and the doctrine of appropriation of waters, as the same are construed and applied in the states and territories of the arid and semi-humid regions of the United States, and also including the statutes of the respective states and territories and decisions of the courts relating to those subjects. pp. 792. 8°. Wash., Lowdermilk & co., 1894. W^A
- 805 **Kittle, Robert.** History and science of irrigation, artesian and petroleum and deep well drilling. pp. 99. il. nar. 12°. Fremont, Nebr., [1895]. W^A W^C
- 806 **Klippart, John H.** Principles and practice of land drainage; embracing a brief history of underdraining, a detailed examination of its operation and advantages, a description of various kinds of drains, with practical directions for their construction, the manufacture of drain tile, etc. pp. 454. il. 12°. Cincinnati, R. Clarke & co., 1861. W^C

Klippart, John H.—Continued.

— 1862.

W^A W^C

— Ed. 2. pp. 454. il. 12°. Cincinnati, R. Clarke & co., 1867. W^P

- 807 Knibbs, G. H. Steady flow of water in uniform pipes and channels. (*In Roy. soc. N. S. W. Jour. and proc.*, 1897. 31:314-355. 1897.)

Koning, — de. *See*, as joint author, Hasselt, J. van.

- 808 Korzybski, Władysław Habdank. Instrukcyja do przeprowadzenia melioracyj rolnych. [Instructions for the improvement of fields.] pp. 144. il. 8°. Warszawa, Skład główny w księgarni Gebethnera i Wolffa, 1889. W^A

- 809 — Melioracyje rolne. [Improvement of fields.] pp. 183. il. 8°. Warszawa, Skład główny w księgarni Gebethnera i Wolffa, 1887. W^A

- 810 Krantz, J. B. Study on reservoir walls; translated from the French by F. A. Mahan. pp. 54. pl. 8°. N. Y., Wiley & sons, 1883. W^G W^C

- 811 Kresnik, Peter. Vorstudien über die bodenbewässerung; inaugural-dissertation . . . an der Universität Leipzig. pp. 49 [+2]. 8°. Göttingen, 1881. W^A

- 812 Kreuter, Franz. On the design of masonry dams. (*In Instit. civ. eng. Min. of proc.* 115:63-81. 1894.)
Discussion and correspondence on masonry dams and impounding reservoirs given, 115:82-185.)

- 813 — Praktisches handbuch der drainage, oder Anleitung zur trockenlegung nasser und kalter gründe und zur dauernden boden-verbesserung nach englischer art. pp. 217. pl. 8°. Wien, C. Gerold, 1851. W^C

* — Ed. 2. Wien, 1854.

- 814 Kühl, Charles Henry Leopold. Sulina mouth of the Danube. (*In Instit. civ. eng. Min. of proc.* 91:329-333. 1888.)
This subject is treated at length in papers and reports by Sir Charles Hartley.

- 815 Kuhn, F. Gileppe dam at Verviers; [abstract]. (*In Instit. civ. eng. Min. of proc.* 56:337. 1879.)
Original paper in *Civilingenieur*, 1879, p. 1.

- 816 Kuichling, E. Loss of head resulting from the passage of water through a 24-in. stop valve. (*In Amer. soc. civ. eng. Trans.* 26:439-468. pl. 1892.)
Paging given includes discussion on the paper.

- 817 *Künzel, F. Sächsische landescultur-gesetze. Leipzig, 1872.

- 818 Kutter, Wilhelm R. Bewegung des wassers in canälen und flüssen; tabellen und beiträge zur erleichterung des gebrauchs der neuen allgemeinen geschwindigkeits-formel von Ganguillet und Kutter. pp. 134. pl. 8°. Berl., Paul Parey, 1885. W^A

- 819 * — Kurzer bericht über die neuen theorien der bewegung des wassers in flüssen und kanälen von Darcy und Bazin, und von Humphreys und Abbot; nebst einer coefficienten-scala zum gebrauch für den schweizerischen ingenieur. Bern, 1868.
Demonstrates the inapplicability of Humphreys and Abbot's formula to channels with great descent.

Kutter, Wilhelm R.—Continued.

- 820 *—— Neue formeln für die bewegung des wassers in kanälen und regelmässigen flussstrecken. pp. 91. pl. 4°. Wien, 1871.

*—— ——— Ed. 2. Wien, 1877.

—— *English.* New formula for the mean velocity of discharge of rivers and canals; translated from articles in the *Cultur-ingénieur* by Lewis D'A. Jackson. pp. 95+cxl. pl. 2. 8°. Lond., E. & F. N. Spon, 1876. W^G W^P

Also translated into Italian by B. Dal Basco.

—— *See also*, as joint author. Ganguillet, E.

- 822 *Laffineur, Jules. Guide pratique de l'ingénieur agricole hydraulique, desséchement, drainage, irrigations, etc.; suivi d'un appendice contenant les lois . . . pp. 266. pl. Paris, [1865].

*—— ——— 12°. Paris, 1874. (Bibliothèque des professions, etc.)

- 823 *—— Hydraulique et hydrologie souterraine et superficielle. 12°. Paris, [18—?]. (Bibliothèque des professions, etc.)

- 824 Lafont, — de. Étude sur les règlements d'eau; comprenant un résumé des expériences faites par Mm. Castel, Poncelet, Lesbros et Boileau sur l'écoulement des orifices ouverts à la partie supérieure. (*In Ann. des ponts et chaussées: mém. et doc.*, 1861, semest. 1. pp. 225-348. pl.)

- 825 La Grange, B. S. Tabulation of artesian wells data. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 2. pp. 112-114. 1892.)

- 826 Lamaisse, —. Barrage du Chéliff. (*In Ann. des ponts et chaussées: mém. et doc.*, 1874, semest. 1. pp. 569-622. pl.)

- 827 ——— Mémoire sur les irrigations de l'Inde. (*In Ann. des ponts et chaussées: mém. et doc.*, 1869, semest. 2. pp. 225-306. pl.; 1871, semest. 2. pp. 55-162. pl.; 1873, semest. 1. pp. 355-454. pl.)

- 828 ——— Note sur les drainages exécutés dans le département du Jura. (*In Ann. des ponts et chaussées: mém. et doc.*, 1861, semest. 1. pp. 49-68.)

- 829 *Lamb, Horace. Hydrodynamics. 8°. Cambridge, 1895.

This is the second edition of his Treatise on the mathematical theory of the motion of fluids.

- 830 *—— Treatise on the mathematical theory of the motion of fluids. pp. 259. 8°. Cambridge, University press, 1879.

- 831 Lamminga, A. G. Irrigation and drainage works in Probolinggo, [Java]; [abstract]. (*In Instit. civ. eng. Min. of proc.* 127:423. 1897.)

Original paper in *Tijdschrift van het Koninklijk institut van ingenieurs*, 1894-95. p. 93.

- 832 Lamothe, Léonce de. Notes de statistique et d'administration pratique concernant les marais, les petits cours d'eau, les établissements à former sur les ruisseaux. pp. 90. 8°. Bordeaux, 1843. W^C

- 833 Landreth, William B. Improvement of a portion of the Jordan level of the Erie canal. (*In Amer. soc. civ. eng. Proc.* 25:1021-1036. pl. 1899; with discussion, *Trans.* 43:566-602. pl. 1900.)
- 834 Lane, Alfred Church. Lower Michigan mineral waters: a study into the connection between their chemical composition and mode of occurrence. pp. 97. il. pl. maps. 8°. Wash., Govt., 1899. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 31.) W^A
- — (U. S.—*House of Representatives.* 56th Cong. 1st sess. H. doc. 119. *In v.* 73.) W^A
- Continuation of his Water resources of the lower peninsula of Michigan.
- 835 — Water resources of the lower peninsula of Michigan. pp. 97. il. pl. maps. 8°. Wash., Govt., 1899. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 30.) W^A
- — (U. S.—*House of Representatives.* 55th Cong. 3d sess. H. doc. 300. *In v.* 73.) W^A
- Includes articles by R. E. Horton and J. L. Greenleaf.
- 836 Latham, John Herbert. Soonkêsala canal of the Madras irrigation and canal company. (*In Instit. civ. eng. Min. of proc.* 34:67-110. pl. map. 1872.)
- Paging embraces discussion on the paper.
- Launay, Félix. *See*, as editor, Durand-Claye, Alfred Augustin.
- 837 Laurent, Ch. Mémoire sur le Sahara oriental, au point de vue de l'établissement des puits artésiens dans l'Oued-Souf, l'Oued-R'ir et les Zibans. pp. 92. il. maps. 8°. Paris, 1859. W^G
- Extrait des *Mémoires de la Société des ingénieurs civils.* Séance du 20 juin 1856.
- 838 *Lauterburg, R. Ueber den einfluss der wälder auf die quellen und stromverhältnisse der Schweiz. Bern, 1877.
- 839 Lawford, Edward. Letter . . . on the new regulating dam to the Cauvery, and the general benefit derived from the Coleroon annicuts. (*In Reports on various professional subjects, Madras Presidency.* Ed. 2. 2:202. 1859.)
- Dated Dec. 5, 1845.
- 840 — Report on the irrigation of the third division. (*In Reports on various professional subjects, Madras Presidency.* Ed. 2. 2:25-33. 1859.)
- Includes two reports, dated May 15, 1840, and Jan. 31, 1840, respectively.
- 841 *Leclerc, J. M. J. Traité de drainage, ou Essai théorique et pratique sur l'assainissement des terrains humides. Ed. 2. pp. 359. il. pl. Bruxelles, 1857.
- Preface of 1st edition is dated 1853.
- — Ed., 3 rev. pp. 424. il. pl. 12°. Bruxelles, Librairie agricole d'Émile Tarlier, [1866]. W^C
- Leclercq, F. *See*, as joint author, Bodson, —.

- 843 *Leger, A. Canaux d'irrigation de la vallée du Rhône; solution morcelée et progressive. pp. 33. pl. Lyon, 188—.
- 844 Le Mesurier, J. Report on the slips in the earthen embankments of the tanks at Ekrúk, Askti, and Waghád in Bombay Presidency. pp. 5. f°. [Bombay, 1885.] (Bombay—*Public works department—Irrigation department.*)
- Lemoine, G. See, as joint author, Belgrand, Marie François Eugène.
- 845 Le Rond, L. Note sur les barrages en maçonnerie. (*In Ann. des ponts et chaussées: mém. et doc.*, 1895. semest. 2. pp. 77–89.)
- —; [critique]. par Léon Durand-Claye. (*In Ann. des ponts et chaussées: mém. et doc.*, 1897, trimest. 1. pp. 291–294. il.)
- 846 Lesbros, Joseph Aimé. Expériences hydrauliques sur les lois de l'écoulement de l'eau. (Mémoires présentés par divers savants à l'Académie des sciences de l'Institut national de France.)
- Experiments made in 1828, 29, 31, and 32, forming a continuation to paper presented to the Academy by Poncelet and Lesbros.
- See also, as joint author, Poncelet, Jean Victor.
- 847 Leslie, James. Observations on the flow of water through pipes, conduits, and orifices. (*In Instit. civ. eng. Min. of proc.* 14: 273–317. 1855.)
- The paging given includes discussion on the subject.
- 848 Lette, —. Die preussische gesetzgebung über benutzung der privatflüsse zur bewässerung von grundstücken. Berl., 1850.
- 849 Leverett, Frank. Water resources of Illinois. (*In U. S.—Interior, Dept. of the—Geological survey. 17th Annual report, 1895/96. pt. 2. pp. 695–849. il. pl. maps. 1896.*) W^A
- — pp. 155. il. pl. maps. 4°. Wash., Govt., 1896.
- 850 — Wells of northern Indiana. pp. 82. maps. 8°. Wash., Govt., 1899. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of. Water-supply and irrigation papers* 21.) W^A
- — (U. S.—*House of Representatives. 55th Cong. 3d sess. H. doc. 278. In v. 73.*) W^A
- 851 — Wells of southern Indiana. pp. 64. 8°. Wash., Govt., 1899. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of. Water-supply and irrigation papers* 26.) W^A
- — (U. S.—*House of Representatives. 55th Cong. 3d sess. H. doc. 283. In v. 73.*) W^A
- 852 Levinge, H. C. Soane canal, [in Behar]. (*In Professional papers on Indian engineering. 7: 329–338. pl. 1870.*)
- 853 Lévy-Salvador, Paul. Hydraulique agricole. 3 v. il. pl. 12°. Paris, V^{re} Ch. Dunod, 1896–1900. (Bibliothèque du conducteur de travaux publics.) W^A

CONTENTS—v. 1. Cours d'eau non navigables ni flottables.—v. 2. Généralités; établissement des canaux d'irrigation; prises d'eau; ouvrages d'art; barrages-réservoirs; lacs-réservoirs; appareils élévatoires; canaux secondaires et rigoles d'arrosage; étude d'un réseau de distribution; utilisation des eaux; concession et administration des canaux d'irrigation; annexes.—v. 3. Assainissements et dessèchements, colmatages polders; drainage, utilisation agricole des eaux d'égout, annexes.

Liburnau, J. R. Lorenz. See Lorenz-Liburnau, Josef Roman.

- 854 Lieckfeldt, —. Strength of arched masonry dams; [abstract].
(*In* *Instit. civ. eng. Min. of proc.* 138: 504. 505. 1899.)
Original paper in *Centralblatt der bauverwaltung*, 1899. p. 301.
- 855 Liernur, G. A. Wady Rayan survey. (*In* *Egypt—Public works ministry. Notes on the Wady Rayan.* pp. 5–10. 1888.)
Lincoln, *Nebr.* See, for irrigation congress held here in 1897,
National irrigation congress, Official report.
- 856 Lippincott, Joseph Barlow. Preliminary report relating to stream measurements and reservoir surveys, made [by U. S. Geological survey] in cooperation with the California water and forest association, 1900. pp. 48. 8°. n. p., [Cal. Water and Forest Assoc., 1900].
To be followed by a detailed publication with maps, diagrams, and views.
— —; [revised with additional matter, entitled] Progress report of co-operative investigation by U. S. Geological survey and California water and forest association, 1900. pp. 38. 8°. [Wash., Govt., 1900.] (U. S.—*Senate.* 56th Cong. 2d sess. S. doc. 59.)
- 858 — Storage of water on Gila river, Arizona. pp. 98. il. pl. maps. 8°. Wash., Govt., 1900. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 33.) W^A
— — (U. S.—*House of Representatives.* 56th Cong. 1st sess. H. doc. 351. *In* v. 73.) W^A
- 859 — Water supply of San Bernardino valley. (*In* U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Report of progress of stream measurements, 1897. pp. 540–632. il. pl. 1899.)
- 860 Litchfield, H. C. Hartz river valley irrigation scheme; reports of Litchfield, engineer-in-charge . . . covering letters by the chief inspector. pp. 53. map. f°. Cape Town, Govt., 1899. (Cape of Good Hope—*Public works department.*) W^A W^G
- 861 Livesay, Charles Edward. Dimensions of channels for surface drainage. (*In* *Instit. civ. eng. Min. of proc.* 128: 283–292. pl. 1897.)
Refuting conclusions of Mr. James Craig in his paper on Discharge of catchment areas.
- 862 Llaurodo, André de. De l'avenir des canaux d'irrigation; rapport. pp. 12. 4°. Paris, 1889. (Exposition universelle de 1889. Congrès international de l'utilisation des eaux fluviales.) W^G
— — (*In* *his* *Projet de loi de secours aux entreprises de canaux et réservoirs d'irrigation.* pp. 32–42. [1891.])
— — *Spanish.* (*In* *his* *Proyecto de ley de auxilios á los canales y pantanos de riego.* pp. 47–58. 1890.)
- 863 — Les irrigations en Espagne. (*In* *Ann. des ponts et chaussées: mém. et doc.*, 1878, semest. 2. pp. 613–630.)
Taken from his *Tratado de aguas y riegos.* pp. 1–19.
— — pp. 20. 8°. Paris, Dunod, 1879. W^A W^G

Llaurado, André de—Continued.

- 864 ——— Proyecto de ley de auxilios á los canales y pantanos de riego y exposición de motivos de la ley. pp. 58. 8°. Madrid, 1890. W^A

——— *French.* Projet de loi de secours aux entreprises de canaux et reservoirs d'irrigation. pp. 42. 8°. n. p., [1891]. (Congrès international d'agriculture à la Haye en 1891. sec. 4. Questions agricoles techniques.) W^A

- 865 ——— Reservoirs établis en Espagne; rapport. pp. 13. 4°. Paris, 1892. (Congrès international de navigation intérieure, 5^{me}. 4^{me} question. 1892.) W^G

——— *English.* Reservoirs in Spain; [translated by Sharp]. pp. 12. 4°. Paris, 1892. (International congress on inland irrigation, 5th. Question 4. 1892.)

- 866 ——— Tableau comparatif des barrages-reservoirs les plus importants de l'Espagne. (*In Ann. des ponts et chaussées: mém. et doc.*, 1881, semest. 2. pp. 224–227.)

- 867 ——— Tratado de aguas y riegos. Ed. 2, rev. 2 v. 8°. Madrid, Moreno y Rojas, 1884. W^A W^C

- 868 *Löbe, William. Katechismus der drainierung und der entwässerung des bodens überhaupt. Ed. 3, rev. il. 8°. Leipz., 1881.

- 869 Login, Thomas. On the benefits of irrigation in India and on the proper construction of irrigating canals. (*In Instit. civ. eng.* Min. of proc. 27:471–482. pl. 1868.)

Discussion on irrigation in India and Spain is given, 27:508–552. il. pl.

- 870 *Lombardini, Elia. Dei cangiamenti cui soggiacque l'idraulica condizione del Po. pp. 48. 4°. Milano, 1858.

- 871 *——— Dell'origine e del progresso della scienza idraulica nel Milanese ed in altre parti d'Italia. Ed. 3. pp. 78. 4°. Milano, 1872.

- 872 *——— Essai sur l'hydrologie du Nil; traduit de l'italien par l'auteur. f°. Paris, 1865.

- 873 ——— Guida allo studio dell'idrologia fluviale e dell'idraulica pratica. pp. 216. 8°. Milano, 1870. W^C

- 874 ——— Importanza degli studj sulla statistica de' fiumi, con cenni intorno a quelli finora intrapresi, ed esame degli studj idrologici fatti e da farsi sul Tevere; memoria. pp. 58. map. charts. Milano, 1871. W^C

Estratto dal Politecnico—gior. dell'ing., arch. civ. ed industr., anno 19.

- 875 *——— Sistema irriguo della Lombardia. disposiz legislative e pratiche che lo riguardano, e loro effetti nel perfezionamento agricolo.

Estratto dal Politecnico, ossia giornale dell'ingegnere architetto, 1870.

- 876 Long, Joseph R. Treatise on the law of irrigation covering all the states and territories; with an appendix of statutory law. pp. 526. 8°. St. Paul, Keefe-Davidson law book company, 1901. W^A

CONTENTS.—Riparian rights.—Appropriation.—Right of way for ditches and canals.—Liability for damages caused by construction and use of ditches.—Property in water rights and ditches.—Transfer of water rights.—Abandonment, adverse user and estoppel.—Adjudication of priorities.—Actions for interference with water rights.—Storage of water.—Public control of irrigation.—Irrigation companies.—Irrigation districts.—Desert-land acts.

- 877 Longridge, James Atkinson. The Hooghly and the Mutla. (*In* Instit. civ. eng. Min. of proc. 21: 2-32. Map. 1862.) -
- 878 — On the flow of water through level canals. (*In* Instit. civil eng. Min. of proc. 53: 216-220. 1878.)
- 879 *Lorenz-Liburnau, Josef Roman. Was thut dem wasserbau noth? Wien, G. P. Faley, 1879.
- Los Angeles, Cal. See, for irrigation congress held at this place 1893. National irrigation congress, Official report.
- 880 Loughridge, R. H. [Alkali in California.] (*In* Assoc. of Amer. agric. colleges and experiment stations. Proc., 1899. pp. 66-69. 1900.)
- See also, as joint author, Hilgard, Eugene Woldemar.
- 881 Louisiana—*State engineers, Board of*. Special report on the mouth of Red river and the falls at Alexandria. pp. 66. pl. map. New Orleans, State, 1874. W^G
- 882 Louisiana sugar experiment station. Irrigation [of cane; by W. C. Stubbs]. (*In* 2d ser., bulletin 14. pp. 354-359. 1892.) W^A
- 883 Lucas, Félix. Note sur l'établissement des canaux d'irrigation et de dessèchement sous la condition du minimum de dépense. (*In* Ann. des ponts et chaussées: mém. et doc., 1864. semest. 1. pp. 225-243.)
- 884 Macalister, Robert. Sluices of the Betwa canal head and weir. (*In* Instit. civ. eng. Min. of proc. 138: 328-331. il. 1899.)
- 885 McAlpine, William J. Waves of translation in fresh water. (*In* Amer. soc. civ. eng. Trans. 1: 333-343. 1872.)
- 886 McClatchie, A. J. Irrigation methods in orchards. (*In* Assoc. of Amer. agric. colleges and experiment stations. Proc., 1899. pp. 91, 92. 1900.)
- 887 McConomy, William. Report on Calitzdorp irrigation scheme, Oudtshoorn division. (*In* Cape of Good Hope—*Lands, mines, and agriculture, Department of*. Report on Calitzdorp irrigation scheme. pp. 4-7. 1893.)
- 888 McCulloh, Walter. Construction of a water-tight masonry dam; [Sodom dam]. (*In* Amer. soc. civ. eng. Trans. 28: 185-198. pl. 1893.)
- Discussion on the paper is given, 28: 348-351.
- McCune, A. J. See, as state engineer 1899-1900, Colorado—*Engineer department*, Biennial report.
- 889 McDowell, R. H. Irrigation. pp. 55. il. 8°. Reno, 1894. (Nev. agric. exper. sta. Bulletin 25.)
- 890 McGeachy, Edward. Irrigation in the West Indies; being a simple plan by which they may be perpetuated as valuable and productive sugar colonies; [together with immigration, machinery, central manufactories, manures and improvements generally]. pp. 78. map. 8°. Kingston, Jamaica, E. McGeachy, 1846. W^G W^C
- McHenry, S. A. See, as joint author, Connell, J. H.

- 891 MacKenzie, A. T., *compiler*. History of the Periyár project. pp. 181. il. pl. maps. 4°. Madras, Govt., 1899. W^g W^c
- 892 McKinney, H. G. Irrigation and water conservation in Riverina. (*In* N. S. W.—*Roy. comm. conservation of water*. Third and final report. Appendix, pp. 188–223. 1887.)
- 893 ——— Irrigation in its relation to the pastoral industry of New South Wales. (*In* Roy. soc. N. S. W. Jour. and proc., 1889. 23: 75–96. [1890.]
- ; [abstract]. (*In* Instit. civ. eng. Min. of proc. 100: 445–447. 1890.)
- 894 ——— Irrigation in Upper India. (*In* Roy. soc. N. S. W. Jour. and proc., 1883. 17: 139–148. 1884.)
- 895 ——— Memorandum on the Clarence river and its catchment area. (*In* N. S. W.—*Roy. comm. conservation of water*. Third and final report. Appendix, pp. 15, 16. 1887.)
- 896 ——— Notes and memoranda regarding the Nepean and Warra-gamba rivers. (*In* N. S. W.—*Roy. comm. conservation of water*. Third and final report. Appendix, p. 10. 1887.)
- 897 ——— Notes on the experience of other countries in the administration of their water supply. (*In* Roy. soc. N. S. W. Jour. and proc., 1887. 21: 60–72. 1888.)
- (*In* his Progress report. Appendix 1. pp. 24–28. 1891.)
- , [slightly abridged]. (*In* U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Report on progress of irrigation investigation. pt. 1. pp. 261–267. 1891.)
- 898 ——— Progress and position of irrigation in New South Wales. (*In* Roy. soc. N. S. W. Jour. and proc., 1893. 27: 384–400. [1894.]
- 899 ——— Progress report, [being 1st Annual report]. pp. 30. maps. charts. 1°. Sydney, Govt., 1891. (N. S. W.—*Mines and agriculture, Dept. of—Water conservation*.) W^A
- 900 ——— Report on river-gauges. (*In* N. S. W.—*Roy. comm. conservation of water*. First report. p. 114. 1885.)
- 901 ——— Report on river Murray as a source of supply for canals. (*In* N. S. W.—*Roy. comm. conservation of water*. First report. pp. 118–120. 1885.)
- 902 ——— Report on river Murrumbidgee as a source of supply for canals. (*In* N. S. W.—*Roy. comm. conservation of water*. First report. p. 118. 1885.)
- 903 ——— Report on the Barwon river, and the Tarrion and Cato creeks. (*In* N. S. W.—*Roy. comm. conservation of water*. First report. p. 133. 1885.)
- 904 ——— Report on the Macquarie river and the district between the Macquarie and Bogan rivers. (*In* N. S. W.—*Roy. comm. conservation of water*. First report. pp. 134–136. 1885.)

McKinney, H. G.—Continued.

- 905 ——— Water conservation surveys of New South Wales. (*In* Roy. soc. N. S. W. Jour. and proc., 1896. pp. lxxiv–lxxxix. 1897.)
- 906 MacLean, Loudoun Francis. Chenab weir, [Punjab]. (*In* Instit. civ. eng. Min. of proc. 113:314–318. il. 1893.)
- 907 ——— Sidnai canal system; [abstract]. (*In* Instit. civ. eng. Min. of proc. 103:264–267. 1891.)
Original paper published in *Selections from the records of the government of India, Public works department.* no. 248.
- 908 MacMaster, John Bach. High masonry dams. pp. 132. 24°. N. Y., D. Van Nostrand, 1876. (Van Nostrand's science series.)
W^P
- 909 Madras Presidency—*Public works department.* Cheyaur annicut and channels. (*In* Reports on various professional subjects, Madras Presidency. 4:75–80. 1856.)
- 910 ——— Colleroon annicuts; report by D. Sim. (*In* Reports on various professional subjects, Madras Presidency. 1:131–147. 1851.)
Report is dated 16th July, 1839.
- ———; [reports by H. C. Cotton, D. Sim, J. H. Bell, and S. Best]. (*In* Reports on various professional subjects, Madras Presidency. Ed. 2. 2:108–123. 1859.)
Reports are dated, 1842, 1843, and 1844.
For later report, see Lawford, Edward.
- 911 ——— Project for constructing an annicut across the river Kistnah to irrigate portions of the Masulipatam and Guntoor districts. (*In* Reports on various professional subjects, Madras Presidency. 4:5–74. pl. map. 1856.)
- 912 ——— Report by E. Lawford on irrigation of the 3d division. (*In* Reports on various professional subjects, Madras Presidency. Ed. 2. 2:25–33. 1859.)
- 913 ——— Report upon a project for erecting an annicut across the Vellaur. (*In* Reports on various professional subjects, Madras Presidency. Ed. 2. 2:195–197. 1859.)
- 914 ——— [Reports and letters upon the rivers Cauvery and Colleroon in connection with the construction of the upper and lower annicuts, by A. T. Cotton and A. Ross; together with statement of results, extracted from Fort Saint George Gazette]. (*In* Reports on various professional subjects, Madras Presidency. 1:62–91. pl. 1851.)
- 915 ——— Reports on the irrigation of the delta of the Godavery, in the Rajahmundry and Masulipatam districts; extract from the diary of Captain A. Cotton, 1844. pp. 226. pl. f°. [Madras, 1854.] (*In* Reports on various professional subjects, Madras Presidency. v. 3. 1854.)
- 916 ——— Wulloorpollum sluice; report by [E. Buckle]. (*In* Reports on various professional subjects, Madras Presidency. 1:34–40. pl. 1851.)

Madras Presidency—Public works department—Continued.

- 917 ——— *Irrigation branch.* Administration report, 1892 93–1899/1900. pl. maps. f°. Madras, Govt., 1893–1901. W^G
- 918 ——— ——— Engineering works of the Gódávári delta, descriptive and historical account; compiled by George T. Walsh. Text and plates 2 v. 4°. Madras, Govt., 1896. W^G
- 919 ——— ——— Engineering works of the Kistna delta, a descriptive and historical account; compiled by George T. Walsh. Text & plates 2 v. map. pl. 4°. Madras, Govt., 1899. W^G W^C
- 920 ——— ——— Irrigation in the Madras Presidency; report by J. C. Anderson, chief engineer for irrigation. (*In Professional papers on Indian engineering.* 6:361–385. map. 1869.)
- 921 ——— ——— Irrigation manual; by J. Mullins. pp. 223. pl. 112. f°. Lond., E. & F. N. Spon, 1890. W^G
- 922 * **Magis**, —. Irrigations de la Campine: rapport sur les travaux de l'exercice 1853–1854. pp. 25. 4°. Bruxelles, 1855. (France—*Intérieur, Ministère de l'.*)
- 923 **Mahan**, D. H. Treatise on civil engineering; revised and edited with additions and new plates, by De Volson Wood. pp. 513. il. pl. 8°. N. Y., J. Wiley & son, 1873. W^C
- Mahan**, F. A. *See*, as translator, **Krantz**, J. B.
- 924 **Maitland**, A. Gibb. Delimitation of the artesian water area north of Hughenden; report. pp. 19. map. f°. [Brisbane, Govt.], 1898. (Queensland—*Geological survey.* Publications, no. 121.)
- 925 **Malézieux**, —. Notes sur les travaux publics d'Égypte, recueillies pendant un voyage en 1849–1850. (*In Ann. des ponts et chaussées: mém. et doc.*, 1851, semest. 1. pp. 161–192. pl.)
- CONTENTS—Des irrigations en Egypte; barrage du Nil.—De la navigation du Nil entre Alexandrie et Assouan; rectification de la première cataracte.—Le Caire et Alexandrie.
- 926 **Manara**, Enrico. Hydraulic work and inland navigation in Italy, administrative regulations and methods of construction; [abstract]. (*In Instit. civ. eng. Min. of proc.* 105:357–359. 1891.)
- Original paper in *Politecnico*, 1890. pp. 573, 655. 1891.
- 927 * **Mancha de Rafael**, —. Memoria sobre los riegos de la huerta de Murcia. 1836.
- 928 * **Mangon**, Hervé. Études sur le drainage au point de vue pratique et administratif; extraits d'un rapport. pp. 378. pl. 12. Paris, 1853.
- 929 ——— Études sur les irrigations de la Campine et les travaux analogues de la Sologne et d'autres parties de la France. pp. 117. map. pl. 8°. Paris, Carilian-Gœury et V. Dalmont, 1850. W^G
- 930 ——— Expériences sur l'emploi des eaux dans les irrigations sous différents climats et sur la proportion des limons charriés par les cours d'eau. Ed. 2, [rev.]. pp. 198. pl. 4°. Paris, Dunod, 1869. W^G W^P

CONTENTS—pt. 1. Jaugeage des eaux employées.—pt. 2. Examen chimique des eaux et des récoltes.—1st Mémoire (1864). Expériences sur les limons charriés par les cours d'eau.—2d Mémoire. Expériences sur les limons charriés par les cours d'eau.

Mangon, Hervé—Continued.

- 931 — Instructions pratiques sur le drainage; réunies par ordre du Ministre de l'agriculture, du commerce et des travaux publics. pp. 216. il. 12°. Paris, Imprimerie impériale, 1855.

W^A W^P W^C

- 932 Manning, James. Condensation of moisture beneath the surface, a solution of the water question in arid sections. pp. 15. 8°. n. p., n. d. W^A

- 933 Manning, Robert. On the results of a series of observations on the flow of water off the ground in the Woodburn district, near Carrickfergus, Ireland. (*In* *Instit. civ. eng.* Min. of proc. 25:458-479. pl. 1866.)

Paging includes discussion on the subject.

- 934 Manson, Marsden. Features and water rights of Yuba river, California. (*In* *U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 115-154. 1901.)

- 935 — Reconnaissance of Yuba river, Cal. (*In* *Olmsted, Frank H.* Physical characteristics of Kern river, Cal. pp. 39-54. 1901.)

- 936 — Swamp and marsh lands of California. (*In* *Tech. soc. Pacif. coast. Trans.* 5:83-99. 1888.)

Marcolongo, Ettore. *See*, as joint author, *Carton, Oreste.*

Marichal, Arthur. *See*, as translator, *Bazin, H.*

- 937 Markham, Clements Robert. Report on the irrigation of eastern Spain. 8°. [Lond.], n. d.

- 938 Marsh, George P. Irrigation: its evils, the remedies, and the compensations. (*In* *U. S.—Agriculture, Dept. of.* [Annual report], 1874. pp. 362-381. 1875.) W^A

— — — pp. 22. 8°. [Wash., Govt., 1874.] (*U. S.—Senate.* 43d Cong. 1st sess. S. mis. doc. 55. *In* v. 1.) W^A

- 939 Marx, Charles D. Report on irrigation problems in the Salinas valley. (*In* *U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 193-213. 1901.)

- 940 — Wing, Charles B., and Hoskins, L. M. Experiments on the flow of water in the six-foot steel and wood pipe line of the Pioneer electric power company, at Ogden, Utah. (*In* *Amer. soc. civ. eng. Proc.* 24:307-363. il. pl. 1898; with discussion, *Trans.* 40:471-564. il. pl. 1898.)

— — —; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 134:437. 1898.)

— — —, second series. (*In* *Amer. soc. civ. eng. Proc.* 26:108-128. pl. charts. 1900; with discussion, *Trans.* 44:34-91. charts. 1900.)

— — —, second series; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 141:423. 1900.)

- 941 Marzy, E. Hydraulique. pp. 330. il. pl. 12°. Paris, L. Hachette et cie., 1868. (Bibliothèque des merveilles.) W^P

CONTENTS—Puits artésiens.—Canaux.—Des rivières.—Irrigations et dessèchements.—Distribution des eaux.

Mason, S. C. *See* Kansas agricultural experiment station—*Horticultural department*.

942 Masoni, U. Corso di idraulica teoretica e pratica. pp. 534. il. 8°. Napoli, B. Pellerano, 1889. W^G

943 Mauny de Mornay, Marie Joseph. Pratique et législation des irrigations dans l'Italie supérieure et dans quelques états d'Allemagne; rapport adressé à M. le Ministre de l'agriculture et du commerce. 2 pts. 8°. Paris, Imprimerie royale, 1844. W^A W^C W^G

CONTENTS—pt. 1. *Pratique.—pt. 2. Législation.

Maxwell, George H. *See*, as chairman of executive committee, National irrigation association.

Maxwell, J. P. *See*, as state engineer, 1889–1892, Colorado—*Engineer department*, Biennial report.

944 Maxwell, Walter. Irrigation in Hawaii. pp. 48. il. pl. 8°. Wash., Govt., 1900. (U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Bulletin 90.) W^A

945 Mead, Elwood. Abstract of laws for acquiring titles to water from Missouri river and its tributaries, with legal forms in use. pp. 77. 8°. Wash., Govt., 1899. (U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Bulletin 60.) W^A
Contains water laws of Colorado, Kansas, Montana, Nebraska, South Dakota, Wyoming, and Northwest Territories of Canada.

946 ——— Agricultural situation in California. (In U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Report of irrigation investigations in California. pp. 17–70. 1901.)

947 ——— Arid public lands, their reclamation, management, and disposal. (In *American society of irrigation engineers*. Cession of public lands, etc.; resolutions adopted by the society and papers relative to cession of public lands. pp. 4–19. 1897.)
Read at annual meeting of society, Dec. 11, 1896.

948 ——— Discussion of investigations. (In U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Use of water in irrigation; report. pp. 15–46. il. pl. 1900.)

——— (In U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Use of water in irrigation. pp. 15–46. il. pl. 1901.)

——— Irrigation investigations in California. *See* United States—*Agriculture, Department of—Experiment stations, Office of*.

950 ——— Irrigation studies. (In *Amer. soc. civ. eng. Proc.* 26: 565–591. il. pl. 1900; with discussion, *Trans.* 44: 149–180. il. pl. 1900.)

951 ——— Ownership of water. pp. 8. 8°. Denver, 1887.
Address before the farmers at Fort Collins.

952 ——— Report of experimental work in the department of physics and engineering, [irrigation and meteorology]. pp. 12. il. 8°. Fort Collins, 1887. (Colo. agric. exper. sta. Bulletin 1.) W^A

Mead, Elwood—Continued.

— Report of irrigation investigations in California. *See United States—Agriculture, Department of—Experiment stations, Office of.*

Investigations were conducted by the Office of experiment stations in cooperation with the California water and forest association.

- 954 — Rise and future of irrigation in the United States. (*In U. S.—Agriculture, Dept. of. Yearbook, 1899. pp. 591–612. pl. 1900.*)
- — ; [separate]. 8°.
- 955 — Statement; [before Committee on irrigation of arid lands]. (*In U. S.—House of Representatives. Irrigation of arid lands, Committee on. Hearings. pp. 88–108. 1901.*)
- 956 — — ; [before Committee on public lands]. (*In U. S.—House of Representatives—Public lands, Committee on. Hearings. pp. 124–130. 1901.*)
- Use of water in irrigation, report of investigation made in 1899. *See United States—Agriculture, Department of—Experiment stations, Office of.*
- 958 — Usefulness of reservoirs to agriculture in irrigated regions. pp. 14. il. 8°. [Wash., Govt., 1899.] (*U. S.—Agriculture, Dept. of—Experiment stations, Office of; U. S.—Senate. 55th Cong. 3d sess. S. doc. 124. In v. 11.*) W^A
- 959 — Water-right problems of Bighorn mountains. pp. 62. il. pl. 8°. Wash., Govt., 1899. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of. Water-supply and irrigation papers. 23.*) W^A
- — (*U. S.—House of Representatives. 55th Cong. 3d sess. H. doc. 280. In v. 73.*) W^A
- 960 — Water rights on Missouri river and its tributaries; with papers on water laws of Colorado, by John E. Field, and of Nebraska, by J. M. Wilson. pp. 80. il. maps. 8°. Wash., Govt., 1899. (*U. S.—Agriculture, Dept. of—Experiment stations, Office of. Bulletin 58.*) W^A
- 961 — [Work of Office of experiment stations in the West.] (*In Assoc. of Amer. colleges and experiment stations. Proc., 1899. pp. 78–80. 1900.*)
- *See also, as state engineer, 1886–1898, Wyoming—Engineer department; also, as chairman, Wyoming—State board of control and special commission to select state lands.*

Means, Thomas H. *See, as joint author, Whitney, Milton.*

- 963 Meaux (*France*), Société d'agriculture, sciences et arts, de. Du drainage; extrait d'un rapport publié par la Société d'agriculture, sciences et arts de Meaux, sur un voyage agronomique en Angleterre et en Écosse. pp. 49. il. 8°. Meaux, 1853. W^P

- 964 * **Mechi**, John Joseph. Experience in drainage. Ed. 4. 8°. Lond., 1848.
- 965 **Medley**, Julius George. Engineering in the Derajat, [Punjab]. (*In Professional papers on Indian engineering.* 3:278-286. map. 1866.)
- 966 — India and Indian engineering. pp. 119. 12°. Lond., E. & F. N. Spon, 1873. W^P
Three lectures delivered at the Royal engineer institute, Chatham, July, 1872.
- 967 — Irrigation works. Ed. 2. pp. 185. pl. 8°. Roorkee, Thomason civil engineering college, 1873. (Thomason civil engineering college manuals. new series. no. 10.) W^P
Reprint of section no. 10 in the 2d edition of the Roorkee treatise on civil engineering.
- 968 **Meissner**, G. Die hydraulik und die hydraulischen motoren. 2 v. pl. 38 + 98. 8°. Jena, H. Costenoble, 1878, 1882. W^P
CONTENTS—v. 1. Die hydraulik.—v. 2. Theorie und bau der turbinen und wasserräder.
- Mendell**, G. H. *See*, as joint author, **Alexander**, B. S.
- 969 **Mengotti**, Fr. Idraulica, fisica e sperimentale. Ed. 3. 2 v. 8°. Venezia, Francesco Andreola, 1818. W^P
Opera coronata dalla I. r. accademia della Crusca.
- 970 **Menschke**, Jul. Reform des wiesenbaus auf grund der Petersen'schen wiesenbaumethode. Leipz., 1872.
- 971 **Merl**, F. Neue theorie der bodenentwässerung. pp. 70. il. charts 2. 8°. Ansbach, Max Eichinger, 1890. W^A
- 972 **Merrill**, William E., *translator*. Improvement of non-tidal rivers; memoirs by Janicki, L. Jacquet, [and] A. Pasqueau. pp. 194. il. pl. 4°. Wash., Govt., 1881. (*U. S.—War Dept.*) W^G
CONTENTS—Review of the various methods employed for improving the condition of navigable rivers, translated from Note sur les divers moyens employés pour améliorer les conditions de navigabilité des rivières; par S. Janicki. 1879.—Preliminary project for the improvement of the Rhone, translated from Amélioration du Rhône entre Lyon et la mer; par L. Jacquet. 1878.—Preliminary project for the improvement of the Rhone, 1st division, from Lyons to Givors, translated from Avant-projet-général pour l'amélioration du Rhône, 1^{re} section, de Lyon à Givors; par A. Pasqueau. 1878.—Improvement of rivers with movable bottoms by the use of submerged spurs, translated from Amélioration des rivières à fond mobile par l'emploi des épis noyés; par L. Jacquet. 1880.—Review of the various methods employed for improving the condition of navigable rivers, translated from the Russian through the French, Seconde note sur les divers moyens employés pour améliorer les conditions de navigabilité des rivières; par S. Janicki. 1880.
- 973 **Merriman**, Mansfield. Text-book on retaining walls and masonry dams. pp. 122. il. 8°. N. Y., Wiley & sons, 1892. W^G
- 974 — Treatise on hydraulics. pp. 381. il. 8°. N. Y., Wiley & sons, 1889. W^G
- * — — Ed. 2. pp. 384. 8°. N. Y., Wiley & sons, 1890.
- — Ed. 4, rev. pp. 384. il. 8°. N. Y., Wiley & sons, 1894 [^c1889]. W^A
- — Ed. 5, rev. pp. 427. il. 8°. N. Y., Wiley & sons, 1895. W^P
- 975 **Messilla valley land and irrigation company**. Rio Grande dam and irrigation company v. Messilla valley company; memoranda of papers, [etc.]. (*In U. S.—State, Dept. of.* Equitable distribution of the waters of the Rio Grande. pp. 201-205.)
- Mexico**—*Boundary commission*. *See* International commission on the investigation into the distribution of the waters of the Rio Grande.—International water boundary commission.

Mexico—Continued.

- 976 — *Fomento, colonización, industria y comercio, Secretaría de.* Bases convencionales propuestas por el Ministro de fomento á los interesados en el uso de las aguas del río Nazas con el propósito de terminar por un acuerdo mútuo las cuestiones pendientes á virtud del curso de ese río. pp. 97. 8°. México, Govt., 1890. W^G
- 977 — — Breve relación sobre el drenaje según se practica en la hacienda de Zacatepec; por Felipe Ruiz de Velasco. pp. 12. map. 8°. México, 1885. W^A
- 978 — — Desagüe del Valle de México; documentos relativos al proyecto en ejecución. pp. 145. map. charts. 8°. México, Govt., 1888. W^C
- 979 — — Discurso sobre aprovechamiento de las aguas en la agricultura [y legislación de riegos en general]; por José Ramón de Ibarrola. pp. 31. 8°. México, Govt., 1895. (Concurso científico.)
- 980 — *Public works department.* Concession to Carlos Conant; and Mexican colonization laws. pp. 23. 8°. [Mexico, 1890.]
CONTENTS—Contract between Gen. Carlos Pacheco, Minister of public works, representing the government of Mexico, and Mr. Carlos Conant, for construction of irrigating canals on the banks of the rivers Yaqui, Mayo, and Fuerte, and for purchase and colonization of lands.—Colonization laws decreed by the congress of the United States of Mexico.
- 981 * **Meyn, Friedrich.** Grundzüge des wiesenbaus und der drainage. Heidelberg, 1880.
- 982 * **Michaelis, K.** Beschreibung von wasserbauanlagen in Irland für entwässerung, binnenschiffahrt, nutzbarmachung von wasser-kraft u. s. w. Berl., 1866.
- 983 **Michelier, —.** Note sur la distribution des eaux de la Neste, travaux du réservoir d'Orédon. (*In Ann. des ponts et chaussées: mém. et doc.*, 1887, semest. 2. pp. 326-337. pl.)
 — —; [abstract entitled] Oredon reservoir. (*In Instit. civ. eng. Min. of proc.* 91: 519-521. 1888.)
- 984 * **Midy, —.** Le drainage et l'irrigation. pp. 22. Paris, Librairie agricole de la Maison rustique, 187-.
- 985 **Miles, Manly.** Land draining; a handbook for farmers on the principles and practice of farm draining. pp. 199. il. 12°. N. Y., Orange Judd co., 1892. W^C
 — — 1897. W^A
- Millar, W. J.** See, as editor, **Rankine, William John Macquorn.**
- Miller, A. M.** See, as translator, **Barois, Julien Hippolyte Eugène.**
- 986 **Miller, Howard.** Preliminary report on the possibilities of the reclamation of the arid regions of Kansas and Colorado by utilizing the underlying waters. (*In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Final report. pt. 1. pp. 303-306. map. 1892.)
- 987 **Mills, A. A.** Farm irrigation, by Mills; Orchard irrigation, by E. S. Richman. pp. 76. 8°. [Salt Lake City], 1895. (Utah agric. college exper. sta. Bulletin 39.) W^A

- 988 **Mills, Anson.** International dam in the Rio Grande river, near El Paso, Texas; letters to Secretary of State, Dec. 10, 1888. pp. 6. 8°. [Wash., Govt., 1896.] (*U. S.—House of Representatives.* 54th Cong. 1st sess. H. doc. 125. In v. 47.) W^A
- — (In *his and Follett's Reports* on the investigations and survey for an international dam and reservoir on the Rio Grande del Norte. Appendix A. pp. 31–36. 1896.)
- 989 — Statement before House select committee on irrigation of arid lands. (*In U. S.—House of Representatives—Irrigation of arid lands in the United States, Select committee on.* Ceding arid lands to states and territories. 1891.)
- 990 — and **Follett, W. W.** Reports on investigations and survey for an international dam and reservoir on the Rio Grande del Norte to preserve boundary between the United States and Mexico by controlling flood waters of said river. pp. 86. 8°. map. charts. Wash., Govt., 1896. (*U. S.—Interior, Dept. of the—Geological survey.*)
Appended are congressional reports, hearings, etc., bearing on this subject.
- 991 **Milne, J.** Effects of earthquakes on waterworks. (*In Burton, William Kinninmond.* Water supply of towns and the construction of waterworks.)
- 992 **Minard, Ch. J.** Expériences faites en 1802 par Tourneux et Minard sur l'écoulement de l'eau. (*In Ann. des ponts et chaussées: mém. et doc.,* 1832, semest. 1. pp. 405–407.)
- 993 **Mingaye, John C. H.** Analyses of some of the well, spring, mineral, and artesian waters of New South Wales, and their probable value for irrigation and other purposes. (*In Roy. soc. N. S. W. Jour. and proc.,* 1892. 26:73–132. [1893.])
- Missoula, Mont.** See, for irrigation congress held here in 1899, National irrigation congress, Official report.
- 994 * **Möllendorf, G. von.** Die regenverhältnisse Deutschlands und die anwendbarkeit der regenbeobachtungen bei ent- und bewässerungen. Görlitz, 1863.
- 995 * **Möller, P.** Die Petersen'sche wiesenbau-methode. Wismar, 1876.
- 996 * **Moncrieff, Colin C. Scott.** Irrigation in Egypt. 8°. Chat-ham, Mackay & co., 1893.
- 997 — Irrigation in Lower Egypt. (*In Great Britain—Foreign office.* Reports from Her Majesty's diplomatic and consular officers abroad. Commercial no. 41, 1883; inclosure no. 2. pp. 3–7. pl. 1883.) W^G
- 998 — Irrigation in southern Europe; being the report of a tour of inspection of the irrigation works of France, Spain, and Italy, undertaken in 1867–68 for the government of India. pp. 371. pl. map. 8°. Lond., E. & F. N. Spon, 1868. W^P W^C
- 999 — Irrigation report, 1884–1888. 5 v. 4°. Cairo, Govt., [1884]–1889. (*Egypt—Public works ministry.*)
- 1000 — Note on the corvée in Egypt. pp. 13. 4°. Cairo, 1886. (*Egypt—Public works ministry.*)

* Moncrieff, Colin C. Scott—Continued.

- 1001 ——— Note on the Nile flood of 1887. pp. 36. il. pl. 4°. Cairo, Govt., 1888. (**Egypt**—*Public works ministry*.)
- 1002 ——— Note on the prevention of sharaki land in Egypt. pp. 27. pl. 4°. Cairo, Govt., 1889. (**Egypt**—*Public works ministry*.)
- 1003 ——— Note on the Wadi Raian project. pp. 10. 4°. Cairo, Govt., 1889. (**Egypt**—*Public works ministry*.)
- Note on the Wady Rayan. (*In* **Egypt**—*Public works ministry*. Notes on the Wady Rayan. pp. 29–33. 1888.)
- 1004 ——— Rapport sur le canal Ibrahimieh, présenté à S. E. le Ministre des travaux publics. [Égypte]. pp. 13. il. f°. Le Caire, 1884.
- 1005 ——— Rapports sur le système d'irrigation dans la Basse-Égypte, et sur le canal Ismaïlieh, présentés à S. E. le Ministre des travaux publics. pp. 24. il. f°. Le Caire, 1883.
- 1006 Mondell, Frank W. Statement [before Committee on irrigation of arid lands]. (*In* **U. S.**—*House of Representatives—Irrigation of arid lands, Committee on*. Hearings. pp. 61–71; 81–85. 1901.)
- 1007 Montana—*State arid land grant commission*. Annual report, 1899 1900. 8°. Helena, 1901. W^A
- 1008 Montana agricultural experiment station. Devices for obtaining a constant flow in laterals with variable heads in the main canals or reservoirs; [by A. M. Ryon]. pp. 47–58. il. 8°. Bozeman, 1896. (*Bulletin* 11.) W^A
- 1009 ——— Measurement of water; [by A. M. Ryon]. pp. 147–170. 8°. Bozeman, 1895. (*Bulletin* 6.) W^A
- 1010 Montana state irrigation convention. Proceedings of convention held . . . at Helena, Jan. 7, 8, and 9, 1892; with appendix showing state of irrigation in the counties. pp. 87. 8°. Helena, 1892. W^A
- Montezuma valley canal company. *See* **United States**—*Interior, Department of the*, Irrigation of certain parts of Montezuma valley; *also* **United States**—*Interior, Department of the*, Supply of water for Southern Ute Indian reservation.
- 1011 Montgolfier, — de. Travaux exécutés pour la conduite d'eau de la ville de Saint-Étienne et la construction du réservoir du Furens. (*In* **Ann. des ponts et chaussées: mém. et doc.**, 1875, semest. 1. pp. 99–206. pl.)
- 1012 Montluisant, —. Note sur les dessèchemens, sur les endiguemens, et sur les irrigations. (*In* **Ann. des ponts et chaussées: mém. et doc.**, 1833, semest. 2. pp. 281–294.)
- 1013 Mora, Francesco. Di un canale di derivazione dal Tevere. pp. 69. map. chart. 8°. Roma, 1873. W^C
- 1014 Mora, José Maria. Memoria para informar sobre el origen y estado actual de las obras emprendidas para el desagüe de las lagunas del valle de México. pp. 62. pl. 8°. México, 1823. W^C

- 1015 **Moreno, Federico.** Las irrigaciones de la costa [del Perú]. pp. 226. 12°. Lima, Imp. del Estado, 1900. (Peru—*Fomento, Ministerio de.*) W^G W^C
- Morrill, Park.** *See United States—Agriculture, Department of—Weather bureau.* Daily river stages at river-gauge stations on the principal rivers of the United States.
- 1016 **Morrow, G. E.** Irrigation for Oklahoma. pp. 17. 8°. Stillman, 1896. (Okla. agric. exper. sta. Bulletin 18.) W^A
- 1017 **Mortson, O. C.** Report on the geological character of certain sections of the state of Montana, showing the possibility of imbibition of water which would be available for artesian purposes. (In U. S.—*Agriculture, Dept. of—Artesian and under-flow investigation and irrigation inquiry.* Final report. pt. 2. pp. 78–83. map. 1892.)
- 1018 **Moser, Henri.** L'irrigation en Asie centrale; étude géographique et économique. pp. 379. map. 8°. Paris, Société d'éditions scientifiques, 1894. (Bibliothèque générale de géographie.) W^A W^G
- 1019 **Muchkundi dam;** [abstract]. (In Inst. civ. eng. Min. of proc. 131:408. 1898.)
Original paper in *Engineer*, Oct. 22, 1897. p. 402.
- Muller, Adam.** *See, as joint author, Villeroy, Félix.*
- 1020 **Mullins, J.** Irrigation manual. pp. 223. pl. 112. f°. Lond., E. & F. N. Spon, 1890. W^G
Published for the Madras government. Many of the subjects treated of in this manual were dealt with from time to time as occasion arose, by the author, as chief engineer for irrigation in the form of Professional circulars for the members of the Public works department.
- 1021 **Munn, B.** Practical land drainer; a treatise on draining land. pp. 190. il. 12°. N. Y., C. M. Saxton & co., 1855. W^C
- 1022 **Murphy, Edward Charles.** Windmill, its efficiency and economic use. 2 pts. pp. 147. il. pl. Wash., Govt., 1901. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 41, 42.) W^A
- — (U. S.—*House of Representatives.* 56th Cong. 2d sess. H. doc. 484, 485. In v. 63.) W^A
Revision of his Windmills for irrigation, embodying additional data obtained by more recent investigation.
- 1023 — Windmills for irrigation. pp. 49. il. pl. 8°. Wash., Govt., 1897. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 8.) W^A
- — (U. S.—*House of Representatives.* 54th Cong. 2d sess. H. doc. 350. In v. 70.) W^A
- Murray, Stuart.** *See, as chief engineer, Victoria—Water-supply department.*
- 1024 * **Nadault de Buffon, B.** Considérations sur le régime légal des eaux de sources naturelles et artificielles. Paris, Chevalier-Marescq et cie., 1877.

* **Nadault de Buffon, B.**—Continued.

- 1025 — Cours d'agriculture et d'hydraulique agricole, comprenant les principes généraux de l'économie rurale et les divers travaux d'amélioration du régime des eaux dans l'intérêt de l'agriculture. 3 v. il. pl. maps. 8°. Paris, V. Dalmont, 1853, 1855, 1858. W^G

- 1026 — Des canaux d'arrosage de l'Italie septentrionale dans leurs rapports avec ceux du midi de la France; traité théorique et pratique des irrigations envisagées sous les divers points de vue de la production agricole, de la science hydraulique et de la législation. 3 v. & atlas. 8° & f°. Paris, Carilian-Gœury et V. Dalmont, 1843, 1844. W^G

Edition 2 of this work is entitled *Des canaux d'irrigation de l'Italie*, etc.

- Des canaux d'irrigation de l'Italie septentrionale envisagés sur les divers points de vue de la science hydraulique, de la production agricole et de la législation. Ed. 2. 2 v. & atlas. 8° & f°. Paris, Dunod, 1861, 1862. (*Hydraulique agricole: applications.*) W^G W^C

This work is the 2d edition of his *Des canaux d'arrosage de l'Italie*, etc.

- 1027 * — Du concours de l'état dans les entreprises d'intérêt agricole pouvant être déclarées d'utilité publique, telles que les irrigations, colmatages, limonages, submersions, etc. 8°. Paris, Chevalier-Marescq et cie., 1880.

Souscription du Ministère des travaux publics.

- 1028 **National irrigation association.** Statement of George H. Maxwell, before Committee on irrigation of arid lands. (*In U. S.—House of Representatives—Irrigation of arid lands, Committee on. Hearings.* pp. 31–37, 108–125. 1901.)

- —; [before Committee on public lands]. (*In U. S.—House of Representatives—Public lands, Committee on. Hearings.* pp. 87–121. pl. 1901.)

Includes editorial extracts from newspapers on national irrigation policy.

- 1029 **National irrigation congress.** Address to the people of the United States by the congress, 4th annual session, Albuquerque, N. Mex., Sept. 16–19, 1895. pp. 3. 8°. [Wash., Govt., 1896.] (*U. S.—Senate. 54th Cong. 1st sess. S. doc. 253. In v. 8.*) W^A

- 1030 — Colorado as an agricultural state; progress of irrigation. pp. 56. il. sq. 8°. Denver, 1894.

- 1031 — Official report, 1891–1900. 1st–9th. 8°. Salt Lake City, etc., 1891–1900.

1st Congress (called Irrigation congress) was held at Salt Lake City, Utah, 1891; 2d, Los Angeles, Cal., 1893; 3d, Denver, Colo., 1894; 4th, Albuquerque, N. Mex., 1895; 5th, Phoenix, Ariz., 1896; 6th, Lincoln, Nebr., 1897; 7th, Cheyenne, Wyo., 1898; 8th, Missoula, Mont., 1899; 9th, Chicago, Ill., 1900.

- 1032 — Resolutions adopted by the Fifth national irrigation congress at Phoenix, Ariz., 1896. pp. [4]. 8°. Phoenix, [1896].

- 1033 **Nebraska—Irrigation, State board of.** Biennial report of the state engineer, 1895–'96—1899–1900. 1st–3d. pl. maps. 8°. Lincoln, State, 1897–1901. W^A

1st Biennial report was prepared by W. R. Akers; 2d, by J. M. Wilson; 3d, by C. B. Channel.

- 1034 — — Irrigation laws, 1897. pp. 53. 8°. Lincoln, State, 1897. W^A

Nebraska—Continued.

- 1035 ——— *Legislature*. District and general irrigation law of the state of Nebraska, 1895. pp. 34. 8°. Lincoln, State, 1895.
Distributed by the secretary of state.
- 1036 **Nebraska agricultural experiment station**. Irrigation in Nebraska; by Lewis E. Hicks. pp. 32. 8°. Lincoln, 1887. ([Bulletin 1.])
W^A
- 1037 ——— Water supply in Nebraska; by O. V. P. Stout. pp. 153–172. il. 8°. Lincoln, 1895. (Bulletin 41.)
W^A
- 1038 **Nebraska commission to National irrigation congress**. Report of the investigations of the commission to congress to be held in Denver, Colo., Sept. 3–10, 1894. pp. 33. 8°. n. p., n. d. W^A
- 1039 **Nebraska irrigation annual, 1896–1897**; a suggestive hand-book for the progressive citizen, farmer, and business man. no. 1–2. il. 8°. Lincoln, 1896, 1897. W^A W^C
No. 1 contains proceedings of 3d annual convention of Nebraska state irrigation association; no. 2, the proceedings of the 4th annual convention.
- 1040 **Nebraska state irrigation convention**. Proceedings of convention, Lincoln, Feb. 11–13, 1891. pp. 39. 8°. n. p., n. d. W^A
- 1041 **Němec, A.** Boden-entwässerung in der landwirthschaft mit besonderer berücksichtigung der drainage. pp. 73. il. 8°. Wien, G. P. Faesy, 1882. W^G
- 1042 **Nettleton, Edwin S.** Artesian and underflow investigation; final report of the chief engineer, with . . . additional papers. pp. 116. maps 28. (U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Final report. pt. 2. 1892.) W^A W^G
For contents, see **United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry**. Final report. pt. 2.
- 1043 ——— Progress report of the artesian and underflow investigation between the ninety-seventh degree of west longitude and the foothills of the Rocky mountains. pp. 14. il. maps. charts. 8°. Wash., Govt., 1891. (U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Report of progress of irrigation in November and December. pt. 2. 1891.) W^A
- 1044 ——— Report [of field work in the artesian wells investigation]. (In U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Preliminary investigation, etc. pp. 31–36. pl. 1890.)
- 1045 ——— Reservoir system of Cache la Poudre valley. pp. 48. pl. map. 8°. Wash., Govt., 1901. (U. S.—*Agriculture, Dept. of—Experiment stations, Office of*. Bulletin 92.) W^A
- 1046 ——— Statement concerning estimates for expenditures of survey. (In U. S.—*Senate—Irrigation and reclamation of arid lands, Select committee on*. Report. pt. 5. pp. 106–108, 227. 1890.)
——— See also, as state engineer, 1883–86, **Colorado—Engineer department**, Biennial report.
- 1047 **Nevada agricultural experiment station**. [Irrigation; by R. H. McDowell.] pp. 55. il. 8°. Reno, 1894. (Bulletin 25.) W^A

- 1048 **Nevada state irrigation convention.** Report of proceedings, Carson City, Oct., 1891. pp. 40. 8°. Carson City, State, 1891.
- 1049 **Neville, John.** Hydraulic tables, coefficients, and formulæ for finding the discharge of water from orifices, notches, weirs, pipes, and rivers. Ed. 3. pp. 494. il. 12°. Lond., Lockwood & co., 1875. W^G W^P
 New formulæ for the discharge from tidal and flood sluices, and syphons, general information on rainfall, catchment-basins, drainage, sewerage, water supply for towns and mill power, added to this edition.
- 1050 **New Jersey agricultural college experiment station.** Irrigation of garden crops; [by Byron D. Halsted and J. A. Kelsey]. pp. 16. il. 8°. [Trenton, 1895.] (Bulletin 115.)
- 1051 **New Jersey state agricultural experiment station.** Report on irrigation; by [E. B. Voorhees, director]. (*In* 17th Annual report, 1896. pp. 183-232. pl. 1897.) W^A
- 1052 **New Mexico—Commission of irrigation and water rights.** Report, Dec., 1898. pp. 75. pl. 8°. Sante Fe, 1899.
 Incloses report of P. E. Harroun, civil engineer, to the commission.
- 1053 **New Mexico agricultural experiment station.** Value of Rio Grande water for the purpose of irrigation; [by Arthur Goss]. pp. 31-58. 8°. Las Cruces, 1893. (Bulletin 12.) W^A
- 1054 **New Mexico reservoir and irrigation company, 1st.** Contract and specifications for constructing a dam across the Rio Hondo, together with spillway, outlet tunnel, overflow chamber, and levee, all located near Roswell, New Mexico. pp. [7]. f°. [Roswell, 1890.]
- 1055 **New South Wales—Legislative assembly.** Application for drainage union at Nowra; papers relating to. pp. 16. maps. f°. [Sydney, Govt., 1890.] W^A
- 1056 ——— Public tanks and wells; information respecting construction and maintenance. pp. 272. pl. f°. Sydney, Govt., 1888. W^A
- 1057 ——— Report from select committee on the Menindie irrigation bill; together with proceedings of the committee, minutes of evidence, and appendix. pp. 28. map. f°. Sydney, Govt., 1893. W^A
- 1058 ——— Report from select committee on the Mulgoa irrigation bill; together with proceedings of the committee and minutes of evidence. pp. 24. f°. Sydney, Govt., 1890. W^A
- 1059 ——— Report from select committee on the Segenhoe estate irrigation bill; together with proceedings of committee, minutes of evidence, and appendices. pp. 29. map. f°. Sydney, Govt., 1891. (2d session, 1891.) W^A
- 1060 ——— *Mines and agriculture, Department of—Water conservation.* Artesian boring; report by J. W. Boulton, officer in charge. pp. 17. map. 64 sections of bores. f°. [Sydney, Govt., 1892.] (*N. S. W.—Legislative assembly, 1891-92.*) W^A W^G
- 1061 ——— Progress report, [being 1st Annual report]; by H. G. McKinney, chief engineer. pp. 30. maps. charts. f°. Sydney, Govt., 1891. W^A W^G

New South Wales—Continued.

- 1062 ——— *Royal commission on conservation of water.* First report of the commissioners. Text & maps [2 v.] f°. Sydney, Govt., 1885. W^A W^G

CONTENTS—V. 1. Report of the commissioners: Physical features; rainfall; evaporation; subterranean water; storage of water; tanks and dams; wells; irrigation; navigation; principal river basins and other drainage areas; riparian rights and proposed legislation; conclusions and recommendations.—Canals and irrigation in India; by F. A. Franklin. pp. 108-114.—River Gauges, Railway and other levels, River Murrumbidgee as a source for canals, River Murray as a source of supply to canals; by H. G. McKinney. pp. 114-120.—Namoi river; by F. B. Gipps. pp. 121-122.—Conservation of water in Victoria; report of secretary, C. Robinson. pp. 122-132.—Waterworks trusts. p. 132.—Barwon river and the Tarrion and Cato creeks, Macquarie river and the district between the Macquarie and the Bogan rivers; by H. G. McKinney. pp. 133-136.—Upper Murray valley; by F. B. Gipps. pp. 136-138.—Minutes of evidence.—Water conservation; by John Wright. Appendix H.—Tanks and wells of New South Wales, water supply and irrigation; by A. Peppys Wood. Appendix I.—Notes on drilling and boring artesian wells, as practiced in the United States of America; by C. W. Darley. Appendix J 1.—Wells in Liverpool plains; by T. K. Abbott. Appendix K 1.—Report of superintendent of drills. Appendix L 5.—Water supply by artesian wells for the borough of Tamworth. Appendix V.—Notes on the geology and water supply of New South Wales; by J. Milne Curran. Appendix Z.—Transfer of Malvern water-race to the corporation of the county of Selwyn. Appendices DD 2, DD 3.

A more recent report on the principal river basins and other drainage areas of New South Wales is given in Home, Frederick J., Reports on the prospects of irrigation and water conservation in New South Wales. 1897.

- 1063 ——— Second report of the commissioners. pp. 31. maps. f°. Sydney, Govt., 1886. (N. S. W.—*Legislative council*, 1885-86.) W^G

- 1064 ——— Third and final report of the commissioners. Text & maps [2 v.]. f°. Sydney, Govt., 1887. (N. S. W.—*Legislative assembly*. 2d sess. 1887.) W^A W^G

CONTENTS—V. 1. Report of the commissioners and Dissent of F. B. Gipps. pp. 1-27.—Minutes of evidence. pp. 1-51.—Correspondence on water conservation and irrigation in Europe and America. Appendix. pp. 1-10.—Notes and memoranda regarding the Nepean and Warragamba rivers, Memorandum of the levels of the Hawkesbury; by H. G. McKinney. Appendix. pp. 10, 11.—Upper Darling (Barwon) survey, 4 reports, by J. B. Hotson. Appendix. pp. 11-15.—Memorandum on the Clarence river and its catchment area; by H. G. McKinney. Appendix. pp. 15, 16.—Report on the district between the Lachlan, Bogan, and Darling rivers; by V. Czarlinski. Appendix. pp. 17-27.—Report on the Darling river; by J. B. Donkin and F. B. Gipps. Appendix. pp. 27-29.—Further report on the Darling river; by F. B. Gipps. Appendix. pp. 29, 30.—Evidence taken on Darling river. Appendix. pp. 31-116.—Evidence on the northern coastal rivers. Appendix. pp. 116-186.—Report on the northern coastal rivers. Appendix. p. 187.—Irrigation and water conservation in Riverina; by H. G. McKinney. Appendix. pp. 188-223.—Report on the proposal to divert water from the Snowy river into the Murrumbidgee and Lake George; by J. B. Donkin. Appendix. pp. 224-226.—Catalogue of works on water conservation and irrigation collected by the commission. Appendix. p. 227.

New South Wales, Royal society of. See Royal society of New South Wales.

- 1065 New York—*State engineer and surveyor.* Report on the measurement of the volume of streams and the flow of water in the state of New York; by Edward A. Bond. pp. 128. pl. maps. 8°. Albany, State, 1900.

- 1066 New York aqueduct commission. Reports on researches concerning the design and construction of high masonry dams, in view of the proposed building of Quaker Bridge dam; by B. S. Church, A. Fteley, and a board of experts appointed by the Aqueduct commission, March, 1888. pp. 64. pl. f°. n. p., 1889. W^G W^C

Board of experts consisted of J. B. Davis, J. R. Croes, and W. F. Shunk.

- 1067 Newell, Frederick Haynes. Agriculture, artesian wells for irrigation. pp. 27. 8°. Wash., Govt., 1892. (U. S.—*Interior, Dept. of the—Census*, 1890. Bulletin 193.)

- 1068 ——— Agriculture, irrigation in Arizona. pp. 8. 8°. Wash., Govt., 1891. (U. S.—*Interior, Dept. of the—Census*, 1890. Bulletin 35.)

Newell, Frederick Haynes—Continued.

- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 22-32.)
- 1069 — Agriculture, irrigation in Idaho. pp. 26. 8°. Wash., Govt., 1892. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 157.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 136-156. pl. map.)
- 1070 — Agriculture, irrigation in Montana. pp. 32. 8°. Wash., Govt., 1891. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 153.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 157-176. il. pl. map.)
- 1071 — Agriculture, irrigation in Nevada. pp. 24. 8°. Wash., Govt., 1892. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 163.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 177-192. il.)
- 1072 — Agriculture, irrigation in New Mexico. pp. 14. 8°. Wash., Govt., 1891. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 60.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 193-201.)
- 1073 — Agriculture, irrigation in Oregon. pp. 26. 8°. Wash., Govt., 1892. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 178.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 202-217. il.)
- 1074 — Agriculture, irrigation in Utah. pp. 23. 8°. Wash., Govt., 1891. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 85.)
- —; [revised and greatly enlarged.] (*In his Report on agriculture by irrigation.* pp. 218-235. il. pl. map.)
- 1075 — Agriculture, irrigation in Washington. pp. 17. 8°. [Wash., Govt., 1892.] (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 198.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 236-247.)
- 1076 — Agriculture, irrigation [in western United States]. pp. 22. maps. 4°. Wash., Govt., 1892. (U. S.—*Interior, Dept. of the—Census, 1890.* Extra bulletin 23.)
- —; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 248-256. map.)
- 1077 — Agriculture, irrigation in Wyoming. pp. 15. 8°. Wash., Govt., 1891. (U. S.—*Interior, Dept. of the—Census, 1890.* Bulletin 107.)

Newell, Frederick Haynes—Continued.

- 1078 — Hydrography of the arid regions. (*In U. S.—Interior, Dept. of the—Geological survey.* 12th Annual report, 1890 91. pt. 2. pp. 213-361. il. pl. charts. 1891.) W^A
- 1079 — Introduction. (*In Hutson, W. F.* Irrigation systems in Texas. pp. 9-16. 1898.)
- 1080 — Introduction. (*In Perry, T. O.* Experiments with wind-mills. pp. 11-18. il. pl. 1899.)
- 1081 — Irrigation on Indian reservations. (*In U. S.—Interior, Dept. of the—Indian commissioners, Board of.* 28th Annual report, 1896. pp. 116-118. 1897.)
- 1082 — Irrigation on the Great plains. (*In U. S.—Agriculture, Dept. of.* Yearbook, 1896. pp. 167-196. il. pl. 1897.) W^A
 — —; [separate]. 8°.
- 1083 — Public lands and their water supply. (*In U. S.—Interior, Dept. of the—Geological survey.* 16th Annual report, 1894 95. pt. 2. pp. 457-533. il. pl. maps, 1 in pocket. 1895.) W^A
 — —; [separate]. 4°.
- 1084 — Report of progress of stream measurements, 1897: including papers by Dwight Porter, J. B. Lippincott, and other hydrographers. (*In U. S.—Interior, Dept. of the—Geological survey.* 19th Annual report, 1897 98. pt. 4. pp. 1-632. il. pl. maps. 1899.) W^A
 — —; [separate]. 4°.
- 1085 — Report of progress of stream measurements, 1898. (*In U. S.—Interior, Dept. of the—Geological survey.* 20th Annual report, 1898 99. pt. 4. pp. 1-562. il. pl. map. 1900.) W^A
 — —; [separate]. 4°.
- 1086 — Report of progress of the Division of hydrography, calendar years 1893 and 1894. pp. 126. 8°. Wash., Govt., 1895. (*U. S.—Interior, Dept. of the—Geological survey.* Bulletin 131.)
- 1087 — Report on agriculture by irrigation in western part of United States at 11th Census, 1890. pp. 283. il. pl. maps. 4°. Wash., Govt., 1894. (*U. S.—Interior, Dept. of the—Census.* 1890.) W^A
 Bound with reports on agriculture, irrigation, and fisheries: also separately.
 — — (*In U. S.—House of Representatives.* 52d Cong. 1st sess. H. mis. doc. 340. pt. 20. 1896. *In v. 50*, pt. 10.)
 — — [Ed. 2.] pp. 336. il. pl. maps. 4°. Wash., Govt., 1894 [1896].
 Contains appendix entitled Data concerning water supply, that brings record up to date of publication.
- 1088 — Results of stream measurements. (*In U. S.—Interior, Dept. of the—Geological survey.* 14th Annual report, 1892 93. pt. 2. pp. 89-155. il. pl. 1894.) W^A
 This report is the fifth of a series, the preceding papers of which are: Hydrographic work. 10th Annual report. pt. 2. pp. 78-90.—Hydrography. 11th Annual report. pt. 2. pp. 1-110.—Hydrography of arid regions. 12th Annual report. pt. 2. pp. 213-361.—Water supply for irrigation. 13th Annual report. pt. 3. pp. 1-99.
 — —; [separate]. 4°. 1895.

Newell, Frederick Haynes—Continued.

- 1089 — Statement; [before Committee on irrigation of arid lands].
(In U. S.—*House of Representatives—Arid lands, Committee on.* Hearings. pp. 20-30; 43-61. 1901.)
- 1090 — —; before Committee on public lands. (In U. S.—*House of Representatives—Public lands, Committee on.* Hearings. pp. 40-63. pl. map. 1901.)
- 1091 — Surveys of reservoir sites. pp. 20. 8°. [Wash., Govt., 1899.] (U. S.—*Interior, Dept. of the—Geological survey;* U. S.—*Senate.* 55th Cong. 3d sess. S. doc. 116. In v. 11.)
W^A
- 1092 — Water supply for irrigation. (In U. S.—*Interior, Dept. of the—Geological survey.* 13th Annual report, 1891/92. pt. 3. pp. 1-99. il. pl. 1893.)
W^A
- —; [separate]. 4°.
- —; [abstract]. (In *Instit. civ. eng.* Min. of proc. 117: 432-435. 1894.)
- 1093 Newlands, Francis Griffith. Address to the people of Nevada on water storage and irrigation. pp. 19. maps. 4°. [Reno, Nevada state board of trade, 1890.]
W^A
- 1094 — Statement; [before Committee on irrigation of arid lands].
(In U. S.—*House of Representatives—Irrigation of arid lands, Committee on.* Hearings. pp. 5-20. 1901.)
- —; [before Committee on public lands.] (In U. S.—*House of Representatives—Public lands, Committee on.* Hearings. pp. 7-33; 82-87. il. pl. 1901.)
- 1095 — Storage reservoirs, the arid-land question; speech in the House of Representatives, Jan. 9, 1901. pp. 30. 8°. Wash., 1901.
W^A
- Contains extracts from newspapers.
- 1096 — Hinton, Richard J., Greene, Charles W., and Fulton, R. L. [Correspondence concerning water storage and reclamation of arid lands in Nevada.] pp. 12. 8°. n. p., [1891].
W^A
- 1097 Newman, John. Earthwork slips and subsidences upon public works; their causes, prevention, and reparation; especially written to assist those engaged in the construction or maintenance of railways, docks, canals, roads, waterworks, river banks, reclamation embankments, drainage works, etc. pp. 234. 12°. Lond., E. & F. N. Spon, 1890.
W^G
- 1098 Nichols, George. Phreatic waters in Nye county, Nevada. (In U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Report on progress of irrigation investigation. pt. 1. pp. 207-212. 1891.)
- 1099 Nicolls, J. R. C. Agricultural engineering in India. pp. 92. il. wide 8°. Lond., Offices of "Engineering," n. d.
W^G
- Reprinted from *Engineering*.
- 1100 — Report on the deterioration of the Kali-Burhganga Doab, June, 1889. Text & plates [2 v.]. f°. Roorkee, Govt., 1890. (N. W. P. and Oudh—*P. w. d.—Irrigation branch.*)

- 1101 **Nimmo, Joseph W., jr.** Progress of irrigation in the North-west: Montana, Idaho, eastern Washington, and Oregon, in 1890. (*In U. S.—Agriculture, Dept. of—Artesian and under-flow investigation and irrigation inquiry.* Report on progress of irrigation investigation. pt. 1. pp. 149-179. 1891.)
- 1102 ——— Uncle Sam's farm, reclamation of arid region of United States by means of irrigation. pp. 43. map. 8°. Wash., 1890. W^A
From **Frank Leslie's illustrated newspaper** of Nov. 16, 23, 30, and Dec. 7, 1889.
- 1103 **Nira irrigation canal, [Bombay; abstract].** (*In Instit. civ. eng. Min. of proc.* 128:382. 1897.)
Original paper in **Engineer**, Feb. 5, 19, and March, 1897. pp. 135 et seq.
- 1104 **North Dakota—Irrigation and forestry, Department of.** Annual report of state superintendent, 1st-9th, 1891-1900. 8°. Bismarck, etc., 1892-1901. W^A
W. W. Barrett, state superintendent.
- 1105 **North West Provinces—Public works department.** Collection of the proceedings of the Govt. N. W. P. relating to [the project for a second canal on the right bank of the Ganges to be called] the Lower Ganges canal. 2 pts. il. maps. f°. Allahabad, Govt., 1874. (no. 2.)
- 1106 * ——— ——— *Irrigation branch.* Cavour canal; memorandum by J. H. Dyas, chief engineer of irrigation. 1865. (no. 70.)
Memorandum is based on reports of the Italian irrigation canal company.
——— ——— ——— ——— (*In Professional papers on Indian engineering.* 2:369-381. 1865.)
- 1107 ——— ——— ——— Damage done to works of the Agra canal by the floods of September, 1875. pp. [16]. pl. n. p. [1876].
- 1108 ——— ——— ——— Irrigation and drainage in the Deyrah Dhoon; [report] from [R. E. Forest,] superintendent-general of irrigation. (*In Professional papers on Indian engineering.* 1:57-77. il. pl. 1864.)
- 1109 ——— ——— ——— Revenue report for 1861-62; abstract. (*In Professional papers on Indian engineering.* 1:277-293. 1864.)
- 1110 ——— ——— ——— Revised estimates relating to the project of the Lower Ganges canal. pt. 3. pp. 325. f°. Allahabad, Govt., 1876.
- 1111 ——— ——— ——— Selections from proceedings of the Govt. N.-W. P., relating to the project of the Betwa canal in Bundelkhand. pp. 25+26. il. pl. map. f°. Allahabad, Govt., 1874. (no. 3.)
- 1112 ——— ——— ——— Tank irrigation in Ajmere and Mhairwara; report by F. Home, executive engineer. (*In Professional papers on Indian engineering.* 6:148-164. pl. 1869.)
- 1113 **North West Provinces and Oudh—Public works department—Irrigation branch.** Agra canal atlas; plans. sq. f°. Roorkee, 1884. W^G
- 1114 ——— ——— ——— Complete destruction of the Kali Nadi aqueduct at Nadrai, Lower Ganges canal, by the floods of 17th July, 1885, and the construction of a new aqueduct. pp. 81. pl. maps. [Allahabad, Govt., 1888.] (Proceedings for Dec., 1888.)

North West Provinces and Oudh—*Public works department—*
Irrigation branch—Continued.

- 1115 ——— Irrigation revenue report of the North-Western Provinces for the year ending 31st March, 1893; [by F. V. Corbett]. v. p. charts. maps. f°. Roorkee, 1894. W^G
- 1116 ——— Memorandum on irrigation experiments on the Parichatgarh distributary, Anúpsahr branch, Ganges canal; [by W. J. Wilson]. pp. 49. pl. f°. n. p., [1893].
- 1117 ——— Report on the deterioration of the Kali-Burhganga Doab, June, 1889; by J. R. C. Nicolls, executive engineer. Text & plates [2 v.]. f°. Roorkee, Govt., 1890.
- 1118 *Nubar, Boghos. Note sur les irrigations en Égypte. pp. 80. il. pl. Paris, 1887.
 Publié dans le *Journal le génie civil*, 10: 26-30, 37-42, 73-75, 92, 93, 109-111. il. pl. 1886.
 ———; [abstract]. (*In* *Instit. civ. eng. Min. of proc.*, 89: 515-521, 1887.)
 An illustrated article on these works appeared in *Engineer*, Dec. 3 and 31, 1886.
- 1119 O'Brine, D. Soils and alkali, fertility, irrigation, etc. pp. 27. 8°. (*Colo. agric. exper. sta. Bulletin* 9.) W^A
- 1120 O'Connell, Peter Peirce Lyons. On the relation of the fresh-water floods of rivers to the areas and physical features of their basins; and on a method of classifying rivers and streams with reference to the magnitude of their floods, proposed as a means of facilitating the investigation of the laws of drainage. (*In* *Instit. civ. eng. Min. of proc.* 27: 204-214. pl. 1868.)
 Discussion on this subject is given, 27: 229-273.
- 1121 ——— (*In* *Professional papers on Indian engineering.* 7: 60-74. pl. 1870.)
- 1122 Ohio agricultural experiment station. Subirrigation in the greenhouse; by W. J. Green and E. C. Green. pp. 57-76. 8°. Columbus, State, 1895. (*Bulletin* 61.) W^A
- 1123 Oklahoma agricultural experiment station. Analyses of waters for irrigation; [by] Geo. L. Holter [and] John Fields. pp. 7. 8°. Stillwater, 1899. (*Bulletin* 38.) W^A
- 1124 ——— Irrigation for Oklahoma; [by] G. E. Morrow. pp. 17. 8°. Stillwater, 1896. (*Bulletin* 18.) W^A
- 1125 ——— Study of waters for irrigation; irrigation plant [by] G. L. Holter [and] John Fields. pp. 14. 8°. Stillwater, 1897. (*Bulletin* 29.) W^A
- 1126 Oliver, —. Note relative à la valeur des concessions faites par les anciens seigneurs sur les cours d'eau non navigable ni flottage. (*In* *Ann. des ponts et chaussées: mém. et doc.*, 1856, semest. 2. pp. 373-383.)
- 1127 Olmsted, Frank H. Physical characteristics of Kern river, Cal., and Reconnaissance of Yuba river, Cal.; by Marsden Manson. pp. 57. il. pl. 8°. Wash., Govt., 1901. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of. Water-supply and irrigation papers.* 46.) W^A
 ——— (*U. S.—House of Representatives.* 56th Cong. 2d sess. H. doc. 530. *In* v. 63.) W^A

- 1128 O'Meara, Patrick. Introduction of irrigation into new countries, as illustrated in north-eastern Colorado. (*In Instit. civ. eng. Min. of proc.* 73:178-272. il. pl. 1883.) W^G
Paging embraces discussion upon the paper and correspondence.
- 1129 — *French.* Mémoire sur les principes à adopter pour l'introduction de l'irrigation dans les pays neufs et sur leur application dans le nord-ouest du Colorado; traduit par Mm. Thibault et Levy. (*In France—Agriculture, Ministère de l'Hydraulique agricole, Direction de l.* Bulletin. fasc. C. pp. 130-154. 1885.)
Discussion and correspondence are not given in the French translation.
- 1130 Oppermann, —. Cavour canal; [abstract]. (*In Instit. civ. eng. Min. of proc.* 46:292, 293. 1876.)
Original paper in *Nouvelles annales de la construction*, 3d ser. 1:94.
- 1131 Oregon agricultural experiment station. Drainage, address delivered before the Marion county horticultural society, Salem, Oregon; by John M. Bloss. pp. 11. il. 8°. Corvallis, 1893. (Bulletin 26.) W^A
- 1132 Paladini, E. On the Cigliano elevator and irrigation in Piedmont; [abstract]. (*In Instit. civ. eng. Min. of proc.* 64:361-363. 1881.)
Original paper in *Atti del Collegio degli ingegneri ed architetti in Milano.* 13:129.
- 1133 Pareto, Raffaele. Irrigation et assainissement des terres, traité de l'emploi des eaux en agriculture. Text & tables 4 v. & plates. Text, 16°, tables obl. 12°, plates f°. Paris, Roret, 1851. (*Encyclopédie Roret.*) W^G
- 1134 * — *Italian.* Irrigazione e bonificazione dei terreni; [translated and revised by] Angelo Parrochetti. Text, tables, & plates. 2 v. Milano, 1855.
- Parker, Henry. *See*, as irrigation officer. *Ceylon—Irrigation department.*
- 1135 Parker, Maurice S. Black Eagle Falls dam, Great Falls, Montana. (*In Amer. soc. civ. eng. Trans.* 27:56-68. pl. 1892.)
Paging includes discussion on the paper.
- 1136 * Parkes, Josiah. Essays on the philosophy and art of land-drainage. 8°. Lond., 1848.
Two essays from the *Roy. agr. soc. jour.*, 1844-46.
- 1137 Parkin, John Henry. River-gauging at the Vyrnney reservoir. (*In Instit. civ. eng. Min. of proc.* 92:353-366. 1888.)
Paper read at a meeting of the students, Dec. 16, 1887.
- Parrochetti, Angelo. *See*, as translator. Pareto, Raffaele.
- 1138 Partiot, Henri Léon. Étude sur les rivières à marée et sur les estuaires. pp. 127. pl. maps. 4°. Paris, Baudry et cie., 1892. W^G
- —; complément. pp. 70. il. 4°. Paris, Baudry et cie., 1894. W^G
- *English.* Estuaries; [translated from the French and abridged]. (*In Instit. civil eng. Min. of proc.* 118:47-77. pl. 1894.)
Discussion on this paper and paper on Training of rivers, by S. F. V. Harcourt given, 118:78-189.
Abstract of Partiot's reply to correspondence on the subject given, 119:198-208.

Pasqueau, A. *See* Merrill, William E., *translator*.

Passa, François Jacques Jaubert de. *See* Jaubert de Passa, Jacques François.

- 1139 Passy, G. de. Étude sur le service hydraulique et sur les mesures administratives concernant les cours d'eau non navigables ni flottables. Ed. 3, rev. and enl. pp. 533. 8°. Paris, Dunod, 1876. W^G

CONTENTS—Eaux utiles: usines, irrigations, et colmatages.—Eaux nuisibles: curages et travaux d'amélioration, endiguement et travaux de défense, dessèchement des marais, assainissement des terres humides et insalubres, drainage.—Considérations générales sur la loi du 21 juin 1865.—Suppression des étangs insalubres, assainissement et mise en valeur des communaux, flottage à bûches perdues.—Rivières navigables ou flottables.

- 1140 Patton, W. M. Practical treatise on foundations, explaining fully the principles involved, with descriptions of all of the most recent structures, accompanied by numerous drawings, also an accumulate record of the bearing resistances of materials as determined from the loads of actual structures. Ed. 1. pp. 402. pl. 22. 8°. New York, J. Wiley & sons, 1893. W^C

- 1141 ——— Treatise on civil engineering. pp. 1654. il. pl. 8°. New York, J. Wiley & sons, 1895. W^C

Deals with all the more important branches of engineering.

- 1142 *Patzig, G. C. Der praktische rieselwirth. Ed. 4. Wittenberg, 1862.

- 1143 Pelletreau, —. Mémoire sur les profils des barrages en maçonnerie envisagés dans leurs rapports possibles avec les sous-pressions. (*In* Ann. des ponts et chaussées: mém. et doc., 1897, trimest. 1. pp. 90-192. pl.)

———; [abstract entitled] Sections of masonry dams. (*In* Instit. civ. eng. Min. of proc. 129:419-421. 1897.)

- 1144 Penny, Edmund. Nágpúr waterworks; [abstract]. (*In* Instit. civ. eng. Min. of proc. 93:532. 1888.)

Original paper in *Indian engineering*, March-April, 1888. p. 194 et seq.

- 1145 ——— Nágpúr waterworks extension. (*In* Instit. civ. eng. Min. of proc. 110:238-259. pl. 1892.)

For earlier paper on these waterworks, see Binnie, Alexander Richardson.

- 1146 Pennycuick, John. Diversion of the Periyar. (*In* Instit. civ. eng. Min. of proc. 128:140-163. il. 1897.)

Discussion and correspondence on this paper and the paper on Periyar tunnel, by P. R. Allen, are given, 128:173-205.

- 1147 Perels, Emil. Abhandlungen über kulturtechnik. pp. 333. 8°. Jena, H. Costenoble, 1889. W^G

- 1148 ——— Handbuch des landwirthschaftlichen wasserbaus. Ed. 2, enl. pp. 660. il. 4 pl. 8°. Berlin, P. Parey, 1884. W^G W^P

1st edition was published in 1877.
Contains a bibliography.

- 1149 *——— Trockenlegung versumpfter ländereien mit besonderer berücksichtigung der drainage. pp. 160. Berl. und Leipz., 1875.

- 1150 Perry, Thomas O. Experiments with windmills. pp. 97. il. pl. 8°. Wash., Govt., 1899. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 20.) W^A

Perry, Thomas O.—Continued.

——— (U. S.—*House of Representatives*. 55th Cong. 3d sess. H. doc. 277. In v. 73.) W^A

- 1151 Peru—*Fomento, Ministerio de*. Las irrigaciones de la costa; por Federico Moreno. pp. 226. 12°. Lima, 1900. W^G W^C
- 1152 * Pestalozzi, C. Die geschlechtsbewegung und das natürliche gefälle der gebirgsflüsse. Zürich, 1880.
- 1153 * Petersen, A. Engvanding i forbindelse med rørlægning. pp. 42. pl. København, 1863.
- 1154 * Peyrer, Karl. Das österreichische wasserrecht. gr. 8°. Wien, 1880.
- 1155 Phelps, C. S. Notes on irrigation in Connecticut and New Jersey; by Phelps and Edward B. Voorhees. pp. 64. il. 8°. Wash., Govt., 1897. (U. S.—*Agriculture, Dépt. of—Experiment stations, Office of*. Bulletin 36.)
 CONTENTS—Irrigation in Connecticut; by C. S. Phelps.—Irrigation in New Jersey; by E. B. Voorhees.
- Phoenix, Ariz. See, for irrigation congress held here in 1896, National irrigation congress, Official report.
- 1156 Picard, Alfred. Canal de la Marne au Rhin; construction du réservoir de Paroy. (In *Ann. des ponts et chaussées: mém. et doc.*, 1880, semest. 1. pp. 86–127. pl.)
- 1157 Pichault, S. Retaining walls under superincumbent loads; [abstract]. (In *Instit. of civil eng. Min. of proc.* 139:448. 1900.)
 Original paper in *Mémoires de la Société des ingénieurs civils de France*, 1899. pp. 210–266. Mention is made in the abstract of a list of works of reference appended to the paper.
- 1158 Picquetot, —. Mémoire sur les pouvoirs de l'administration des travaux publics en matière de cours d'eau non navigables ni flottables. (In *Ann. des ponts et chaussées: mém. et doc.*, 1875, semest. 2. pp. 484–534.)
- 1159 Pinchot, Gifford. Statement [on forest preservation as related to conservation of water supply; before Committee on irrigation of arid lands]. (In U. S.—*House of Representatives—Irrigation of arid lands, Committee on*. Hearings. pp. 72–74. 1901.)
- 1160 ———; [before Committee on public lands]. (In U. S.—*House of Representatives—Public lands, Committee on*. Hearings. pp. 65–73. map. pl. 1901.)
- 1161 Pinondel de la Bertoche, —. Note sur les travaux exécutés dans la Campine. (In *Ann. des ponts et chaussées: mém. et doc.*, 1848, semest. 2. pp. 261–373.)
 Extrait du Bulletin des séances de la Société nationale et centrale d'agriculture, mars 1848.
- 1162 * Playfair, J. W. Irrigation in the Deccan. (In *Professional papers on Indian engineering*. 6:37–52. maps. 1869.)
- 1163 Plympton, George W. Van Nostrand's table book for civil and mechanical engineers. pp. 195. 16°. N. Y., D. Van Nostrand co., 1892. (Van Nostrand's science ser.) W^C

- 1164 Pochet, Léon. Mémoire sur la mise en valeur de la plaine de l'Habra, province d'Oran, Algérie. (*In Ann. des ponts et chaussées: Mém. et doc.*, 1875. semest. 1. pp. 261-389. pl.)
Barrage-réservoir.—Assainissement.—Irrigations.
—— —; [abstract, entitled] Irrigation of the plain of l'Habra. (*In Instit. civ. eng. Min. of proc.* 41:247-251. 1875.)
- 1165 Podhagsky, E. von. Irrigation of the Marschfeld: [abstract]. (*In Instit. civ. eng. Min. of proc.* 50:233. 1877.)
Original paper in *Wochenschrift des österreichischen ingenieur- und architekten-vereins*, 2:153.
- 1166 *Podhagsky, Johann von. Technischer bericht zu dem projecte für die Marschfeldbewässerung. Wien, 1877.
Poleni, Giovanni. *See*, as editor, *Frontinus, Sextus Julius*.
Pollock, W. C. *See*, as editor, *Campbell, D. W.*
- 1167 Polonceau, A. R. Des eaux relativement à l'agriculture; traité pratique des moyens de remédier aux dommages causés par les eaux des divers procédés d'irrigation et de limonage et de l'établissement des réservoirs et des étangs. pp. 255. pl. 4. 12°. Paris, Mathias, 1846. W^G
- 1168 Pomeroy, John Norton. Treatise on the law of water rights as the same is formulated and applied in the Pacific states, including the doctrine of appropriation and the statutes and decisions relating to irrigation, revised and enlarged edition of "Pomeroy on riparian rights," with several additional chapters: by Henry C. Black. pp. 592. 8°. St. Paul, West pub. co., 1893. W^A
- 1169 *Poncelet, Jean Victor, and Lesbros, Joseph Aimé. Expériences hydrauliques sur les lois de l'écoulement de l'eau à travers les orifices rectangulaires verticaux à grandes dimensions, entreprises à Metz. 4°. Paris, 1832. (Mémoires présentés par divers savants à l'Académie des sciences de l'Institut national de France.)
These experiments were made in 1827 and 1828. For account of further experiments, from 1828-1832, see Lesbros, Joseph Aimé.
—— —; analyse. (*In Ann. des ponts et chaussées: mém. et doc.*, 1836. semest. 1. pp. 214-236. pl.)
- 1170 Ponmarede, F. A. Desagüe del valle de México: nuevo sistema de impedir las inundaciones de la ciudad y del valle de México y hacer desaparecer en parte las causas de insalubridad que ofrecen uno y otro. pp. 167. 16°. México, 1860. W^C
Text is accompanied by French translation with title-page, and title, Nouveau moyen de prévenir les inondations de la ville et de la vallée de Mexico, et de faire en partie disparaître les causes d'insalubrité qu'elles présentent l'une et l'autre.
- Ponthoz, F. van der Straten. *See Straten Ponthoz, F. van der.*
- 1171 Ponzi, Giuseppe. Tevere ed il suo delta: memoria. pp. 47. maps. 8°. [Roma, 1876.] W^C
Estratto dalla *Rivista marittima*, Luglio, 1876.
- 1172 Poole, William. Rapid preliminary surveys on the Darling river, N. S. W. (*In Instit. civ. eng. Min. of proc.* 139:259-264. pl. 1900.)

- 1173 Pope, J. B. Measurement of water for irrigation. pp. 25. il. 8°. N. Y., [J. B. Pope, '1896].
- 1174 Porter, Dwight. Water-power streams of Maine. (*In U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of. Report of progress of stream measurements, 1897. pp. 34–111. il. maps. 1899.*)
- 1175 Porter, W. M., and Duncan, C. M. Excavation and embankment tables for preliminary estimates. pp. [23]. 4°. Denver, Porter & Duncan, 1896. W^c
- 1176 Possenti, Carlo. Sulla sistemazione idraulica della Valdichiana; osservazioni storico-critiche. pp. 89. 8°. Firenze, 1866. W^c
- 1177 Poston, Charles D. Irrigation. pp. 30. pl. 8°. Chicago, 1887.
- Powell, John Wesley. *See, as director, 1880–1894, United States—Interior, Department of the—Geological survey.*
- 1178 *Pözl, J. von. Die bayerischen wassergesetze vom 28. Mai 1852. Ed. 2. Erlangen, 1880.
- 1179 Prendergast, H. L. Streeviguntum anicut. (*In Professional papers on Indian engineering. 7:3–22. pl. 1870.*)
Includes note by J. C. A., chief engineer.
- 1180 Prince, G. T. Logarithmic diagram for flow of water in pipes; [abstract]. (*In Instit. civ. eng. Min. of proc. 139:418. 1900.*)
Original paper in *Engineering news*, July 6, 1899. p. 4.
- 1181 Professional papers on Indian engineering; edited by J. G. Medley. v. 1–7. il. pl. 8°. Roorkee, Thomason college, [1863]–70. W^G
Papers are also issued separately.
Such papers as relate to irrigation are entered in this list under their respective authors.
- 1182 Prony, Gaspard Clair François Marie Riche de. Description hydrographique et historique des marais Pontins. pp. 454. 4°. Paris, Didot, père et fils, 1822. W^c
- 1183 — Nouvelle architecture hydraulique; contenant l'art d'élever l'eau au moyen de différentes machines, de construire dans ce fluide, de le diriger et généralement de l'appliquer, de diverses manières, aux besoins de la société. 2 v. pl. 4°. Paris, Firmin Didot, 1790, 1796. W^G W^p
- CONTENTS—v. 1. Traité de mécanique à l'usage de ceux qui se destinent aux constructions de tous les genres, et des artistes en général.—v. 2. Description détaillée des machines à feu.
- 1184 Provis, W. A. Experiments on the flow of water through small pipes. (*In Instit. civ. eng. Trans. 2:201–210. 1838.*)
- 1185 Pueblo gravity water company of Colorado. Report of [Jas. D. Schuyler] consulting engineer. pp. 16. map. 8°. Denver, Shattuck print. co., 1890. W^A
- 1186 Punjab—*Public works department—Irrigation branch.* Note on the revised estimates for the Sirhind canal; by H. W. Gulliver, chief engineer of irrigation. v. p. f°. [Lahore, Govt., 1881.] W^G

Punjab—*Public works department—Irrigation branch*—Continued.

- 1187 ——— Report and revised estimate for the Sirhind canal, 1880. v. p. f°. Lahore, Govt., 1880. W^G
- 1188 ——— Report on the Sidhnai canal project, 1883. v. p. f°. n. p., [Govt.], 1883. W^G
- 1189 ——— Revenue report of the Irrigation department, Punjab, 1892/93–98/99. maps. pl. f°. Simla, Lahore, Govt., 1893–1900. W^G
- 1190 ——— Rules for rajbaha estimates, [or canal distributary]; by J. H. Western. supdg. eng. Sirhind canal. pp. [6]. [Lahore, Govt., 1885?]
- 1191 ——— Sidhnai canal atlas; plans. sq. f°. Lahore, 1889. W^G
- 1192 ——— Sidhnai canal project, including the Koranga, Fazal Shah, and Abdul Hakim canals. pp. 56. f°. Lahore, [Govt.,] 1888. W^G
- 1193 ——— Western Jumna canal atlas; plans. sq. f°. Lahore, 1890. W^G
- 1194 ——— Western Jumna canal, revised estimates, 1876, for remodelling and completing Western Jumna canal; report. pp. 41. f°. n. p., 1876. W^G
- 1195 Purcell, Gervaise. Use of asphalt in irrigation works in California. (*In Instit. civ. eng.* Min. of proc. 110:286–288. 1892.)
- 1196 Puvis, A. Irrigation des prés des Vosges. Paris, 1846.
- 1197 Queensland—*Geological survey*. Artesian water in the western interior of Queensland; by Robert L. Jack. pp. 16. 8°. Brisbane, Govt., 1895.
Paper read before Australasian association for the advancement of science, section C, Brisbane session, 16 Jan., 1895.
- 1198 ——— Delimitation of the artesian water area north of Hughenden; report by A. Gibb Maitland, assistant geologist, and note by the government geologist. pp. 19. map. f°. [Brisbane, Govt.,] 1898. (Geological survey publications. no. 121.)
- 1199 ——— [*Public lands and agriculture, Department of.*] Irrigation and conservation of water; reports by A. Rigby, irrigation engineer. pp. 26. pl. maps. f°. [Brisbane, Govt., 1890.] W^G
Contains reports no. 1–8.
- 1200 ——— Irrigation of the Johnstone, Herbert, Mackay, and Oxley districts; [reports by A. Rigby, irrigation engineer]. pp. 12. pl. maps. f°. [Brisbane,] Govt., 1890. (Queensland—*Legislative assembly.*) W^G
Contains reports no. 9–12.
- 1201 ——— *Water-supply department*. Contract for boring for deep artesian water. v. p. f°. n. p., [18—]. W^A
- 1202 ——— Report of the hydraulic engineer [J. B. Henderson] on water supply, 1883–1900. f°. [Brisbane, 1883–1900.] W^A W^G

- 1203 **Rafter**, George W. Genesee river storage surveys; report to C. W. Adams, state engineer. pp. 176. pl. 86. maps. 8°. Albany, State, 1897. (**N. Y.**—*State engineer and surveyor.*)
- 1204 — High masonry dams in Europe; report to C. W. Adams, state engineer. pp. 19. pl. 40. 8°. Albany, State, 1897. (**N. Y.**—*State engineer and surveyor.*)
- 1205 — On the flow of water over dams. (*In Amer. soc. civ. eng. Proc.* 26:226-319. il. pl. 1900; with discussion, *Trans.* 44:220-398. il. pl. chart. 1900.)
 — —: abstract. (*In Instit. civ. eng. Min. of proc.* 141:422. 1900.)
- 1206 — Report on the water supply of the western division of the Erie canal to C. W. Adams, state engineer and surveyor. pp. 52. maps. 8°. Albany, State, 1897. (**N. Y.**—*State engineer and surveyor.*)
- 1207 — Sewage irrigation. 2 pt. pp. 200. il. pl. 8°. Wash., Govt., 1897, 1899. (**U. S.**—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 3, 22.) W^A
 pt. 2 contains a bibliography.
 — — (**U. S.**—*House of Representatives.* 54th Cong. 2d sess. H. doc. 343. *In v.* 70; 55th Cong. 3d sess. H. doc. 279. *In v.* 73.) W^A
- 1208 — Upper Hudson storage surveys; report to C. W. Adams, state engineer and surveyor. pp. 195. pl. maps. charts. 8°. [Albany, State, 1896.] (**N. Y.**—*State engineer and surveyor.*)
- 1209 — Upper Hudson storage surveys; report to C. W. Adams, state engineer, and G. W. Aldridge, superintendent of public works. pp. 58. tables. 8°. Albany, State, 1897. (**N. Y.**—*State engineer and surveyor.*)
- 1210 — Water resources of the state of New York. 2 pt. pp. 200. il. pl. maps. 8°. Wash., Govt., 1899. (**U. S.**—*Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 24, 25.) W^A
 — — (**U. S.**—*House of Representatives.* 55th Cong. 3d sess. H. doc. 281, 282. *In v.* 73.) W^A
- 1211 —, **Greenalch**, Wallace, and **Horton**, Robert E. Indian river dam. pp. 16. il. pl. 4°. n. p., 1899.
 Reprinted from *Engineering news*, May 18, 1899.
- 1212 * **Raillard**, —. Les irrigations de la France, d'après la dernière statistique officielle. 8°. Metz, 1865.
- 1213 **Ramón de Ibarrola**, José. Discurso sobre aprovechamiento de las aguas en la agricultura [y legislación de riegos en general]. pp. 31. 8°. México, Govt., 1895. (**Mexico**—*Fomento, Secretaría de.* Concurso científico.)
- 1214 **Rane**, F. William. Sub-irrigation in the greenhouse. pp. 255-270. 8°. Charleston, State, 1893. (**W. Va. agric. exper. sta. Bulletin 33.) W^A**

- 1215 **Rankine**, William John Macquorn. Manual of civil engineering. Ed. 4. pp. 783. il. 12°. Lond., C. Griffin & co., 1865. W^c
 Preface of 1st edition is dated 1862; 3d edition, 1864.
- —; revised by W. J. Millar. Ed. 20. pp. 818. il. 12°. Lond., C. Griffin & co., 1898. W^c
- 1216 — Report on the design and construction of masonry dams. (*In* **Anderson**, R. C. Tables for facilitating the calculation of every detail in connection with earthen and masonry dams. Appendix.)
- 1217 **Raumer**, Carl von. Petersen'sches be- und entwässerungssystem. Berl., 1870.
- Raux**, A. *See*, as joint author, **Chauveau des Roches**, A.
- 1218 **Reed**, W. M. Use of water in irrigation in Pecos valley, [New Mexico]. (*In* **U. S.**—*Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 85-110. pl. map. 1900.)
- — (*In* **U. S.**—*Agriculture, Dept. of—Experiment stations, Office of.* Use of water for irrigation in Texas. pp. 85-110. pl. map. 1901.)
- 1219 * **Rehbock**, Theodor. Deutsch-Südwest-Afrika; seine wirtschaftliche erschliessung unter besonderer berücksichtigung der nutzbarmachung des wassers. Text & plates [2 v.]. il. pl. maps. 8°. Berlin, Reimer, 1898.
- 1220 **Rennie**, George. Description of the bridge-aqueduct of Roquefavour on the line of the canal of Marseilles. (*In* **Instit. civ. eng.** Min. of proc. 14:190-238. 1855.)
 Paging includes discussion on the subject.
- 1221 **Reports** . . . on various professional subjects of the corps of engineers, Madras Presidency; arranged and printed for private circulation. v. 1-4. Madras, 1851-1856.
 v. 1-3 edited by Capt. J. T. Smith; v. 4, by Maj. J. H. Bell.
 Such papers as relate to irrigation are entered in this list under their respective authors.
- 1222 **Revy**, J. J. Hydraulics of great rivers; the Paraná, the Uruguay, and the La Plata estuary. pp. 163. pl. f°. Lond., E. & F. N. Spon, 1874. W^G W^P
- 1223 **Rhind**, Robert Hunter. Coefficients of discharge applicable to certain submerged weirs of large dimensions. (*In* **Instit. civ. eng.** Minn. of proc. 85:307-326. 1886.)
 The weirs referred to are those constructed by the government of India across the beds of the large water courses which intersect the province of Orissa to supply irrigation canals, situated on the Mahanuddy, Brahmini, and Byturnee rivers.
- 1224 **Richards**, John. Centrifugal pumps; an essay on their construction and operation, and some account of the origin and development in this and other countries. pp. 68. il. 8°. San Francisco, Industrial pub. co., 1894. W^P
- 1225 — Some problems in pumping fluids. (*In* **Tech. soc. Pacif. coast.** Trans. 10:92-116. il. 1893.)
 Paging includes discussion on the subject.
- 1226 **Richman**, E. S. Orchard irrigation. (*In* **Mills**, A. A. Farm irrigation. pp. 73-76. 1895.)

- 1227 Richou, G. Drainage of Lake Copais; [abstract]. (*In* *Instit. civ. eng. Min. of proc.* 88:506-508. 1887.)

Original article in *Génie civil*. 9:357, 373. il. 1886.

Rigby, A. *See*, as irrigation engineer, *Queensland—Public lands and agriculture, Department of.*

Rio Grande dam and irrigation company. *See*, Boyd, Nathan E.; *also* *United States—State, Department of.* Equitable distribution of the waters of the Rio Grande.

- 1229 Rippl, W. Capacity of storage reservoirs for water supply. (*In* *Instit. civ. eng. Min. of proc.* 71:270-278. 1883.)

- 1230 Ritso, George Frederick. Water supply and irrigation of the Canterbury plains, New Zealand. (*In* *Instit. civ. eng. Min. of proc.* 74:238-245. pl. 1883.)

- 1231 *Roberts, J. P. Irrigation in Spain. pp. 42. 8°. Lond., Spon, 1867.

- 1232 Robinson, Charles. Report of the secretary on the conservation of water in Victoria. (*In* *N. S. W.—Roy. comm. conservation of water.* First report. pp. 122-132. 1885.) W^A

- 1233 Robinson, Henry. Hydraulic power and hydraulic machinery. Ed. 2, rev. and enl. pp. 226. il. pl. 8°. Lond., E. & F. N. Spon, 1893. W^P

- 1234 Rodda, J. T. Notes on water supply; containing references, tables, notes, memoranda, and detailed advertisements in relation to waterworks engineering, illustrated description and prices of apparatus, appliances, tools, etc. pp. 140. il. 4°. Lond., 1898.

Taken from *Journal of water supply*, with additions.

- 1235 Roesler, F. E. [Artesian waters, wells, springs, and undersheet supplies of Texas west of 97° longitude.] (*In* *U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 243-319. il. 1890.)

- 1236 Roland, Arthur. Drainage of land, irrigation, and manures; edited by W. H. Ablett. pp. 192. 8°. Lond., Chapman & Hall, 1880. (*Farming for pleasure and profit.*) W^A W^P

Rondelet, Jean. *See*, as translator, *Frontinus, Sextus Julius.*

- 1237 Ronna, A. Les irrigations. 3 v. il. 8°. Paris, Firmin-Didot et cie., 1888-90. (*Bibliothèque de l'enseignement agricole.*)

W^A W^G W^P

CONTENTS—v. 1. Les eaux d'irrigation et les machines.—v. 2. Les canaux et les systèmes d'irrigation.—v. 3. Les cultures arrosées, l'économie des irrigations, histoire, législation et administration.

Ross, A. *See*, as joint author, *Cotton, A. T.*

- 1238 Ross, D. W. Duty of water as related to irrigation problems of Boise valley, Idaho. (*In* *U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 219-248. pl. map. 1900.)

Ross, D. W.—Continued.

— (In **U. S.—Agriculture, Dept. of—Experiment stations, Office of.** Duty of water in Nebraska. pp. 219–248. pl. map. 1901.)

— See also, as state engineer, **Idaho—Engineer department.**

1239 Ross, Justin C. Introduction. (In **Willcocks, W.** Egyptian irrigation.)

1240 — Notes on the distribution of water and maintenance of works in the basin systems of Upper Egypt. Text & maps [2 v.]. 4° & 4°. Cairo, Govt., 1892. (**Egypt—Public works department.**) W^A W^G

1241 — Report on the low Nile of 1888, and on the measures to be undertaken to prevent sharaqi in Upper Egypt. pp. 96. pl. 4°. Cairo, Govt., 1889. (**Egypt—Public works department.**)

1242 Roth, Henry Ling. Notes on continental irrigation. pp. 39. pl. 8°. Lond., Trübner & co., 1882. W^P

CONTENTS—1. Bouches-du-Rhône.—2. Valentia, Grenada, and Seville.—3. Milan and Lucca, and Douai.—4. Conclusions.

Rotrou, Léon de. See, as joint author, **Brisse, Alexandre.**

1243 Royal society of New South Wales. Journal and proceedings, 1875–1900. v. 9–34. 8°. Sydney, [1876]–1900. W^A

Papers published by this society relating to irrigation are entered in this list under their respective authors.

1245 Rozat de Mandres. Mémoire sur les réservoirs de Gentilly et de Coulanges-la-Vineuse. (In **Ann. des ponts et chaussées: mém. et doc.**, 1867, [semest. 1]. pp. 51–62. pl.)

1246 — Mémoire sur les réservoirs de Passy. (In **Ann. des ponts et chaussées: mém. et doc.**, 1859, semest. 2. pp. 90–112. pl.)

— See also **Frontinus, Sextus Julius.**

1247 Ruiz de Velasco, Felipe. Breve relación sobre el drenaje según se practica en la hacienda de Zacatepec. pp. 12. map. 8°. México, Secretario de fomento, 1885. W^A

1248 Russell, H. C. Notes upon floods in Lake George. (In **Roy. soc. N. S. W.** Jour. and proc., 1886. 20:241–260. map. charts. 1887.)

1249 — Notes upon the history of floods in the river Darling. (In **Roy. soc. N. S. W.** Jour. and proc., 1886. 20:155–210. chart. 1887.)

— —; [separate].

W^G

1250 — Some facts bearing upon irrigation. (In **Roy. soc. N. S. W.** Jour. and proc., 1883. 17:129–131. 1884.)

Gives results of experiments for ascertaining loss of water by evaporation from grassed land and cultivated land.

1251 — Source of underground water in the western districts, [Australia]. (In **Roy. soc. N. S. W.** Jour. and proc., 1889. 23:57–63. [1890.]

- 1252 Russell, Israel Cook. Geological reconnoissance in central Washington. pp. 108. il. pl. maps. 8°. Wash., Govt., 1893. (U. S.—*Interior, Dept. of the—Geological survey*. Bulletin 108.)
Investigation of Yakima river basin and vicinity with special reference to artesian resources.
- 1253 ——— Geology and water resources of Nez Perce county, Idaho. 2 pt. il. pl. maps. 8°. Wash., Govt., 1901. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of*. Water-supply and irrigation papers. 53, 54.) W^A
——— (U. S.—*House of Representatives*. 57th Cong. 1st sess. H. doc. 53, 54. W^A
- 1254 ——— Reconnoissance in southeastern Washington. pp. 96. il. pl. map. Wash., Govt., 1897. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of*. Water-supply and irrigation papers. 4.) W^A
——— (U. S.—*House of Representatives*. 54th Cong. 2d sess. H. doc. 344. In v. 70.)
- Russell, Thomas. See United States—*Agriculture, Department of—Weather bureau*. Daily river stages at river-gauge stations on the principal rivers of the United States.
- 1256 Russia—[*Irrigation board*]. Очеркъ работъ Экспедиціи по орошенію на югѣ Россіи и Кавказѣ; составлень начальникомъ экспедиціи Генераль-Лейтенантомъ Жилинскимъ. [Report on the work of the Board on irrigation in south Russia and the Caucasus; prepared by the chief of the board, Lieut.-Gen. Zhilinski. pp. 403+4. 8°. С.-Петербургъ [St. Petersburg], 1892. W^A
- 1257 ——— [*Public works ministry*]. Труды коммисіи учрежденной при министерствѣ путей сообщенія для выработки программы гидрологическаго изслѣдованія полѣсья; издано подъ наблюдениемъ предсѣдателя коммисіи, А. А. Тилло и инженера, К. Г. Александровича. [Acts of commission appointed by the Minister of public works to consider methods for carrying on hydrologic investigations; edited under the surveillance of the president of the commission, A. A. Tillo, and the engineer, K. G. Aleksandrovich.] pp. 121+[1]. map. 8°. С.-Петербургъ, Типографія министерства путей сообщенія [St. Petersburg, Printing office of the minister of public works], 1895.
- 1258 Ryon, A. M. Devices for obtaining a constant flow in laterals with variable heads in the main canals or reservoirs. pp. 47–58. il. 8°. Bozeman, 1896. (Mont. agric. exper. sta. Bulletin 11.) W^A
- 1259 ——— Measurement of water. pp. 147–170. 8°. Bozeman, 1895. (Mont. agric. exper. sta. Bulletin 6.) W^A
- 1260 S., E. Distribution of canal water. (*In Professional papers on Indian engineering*. 4:399–406. pl. 1867; 5:396–399. 1868.)

- 1261 **Saccheri, G.** Experimental hydraulic station at Santhià, [Italy]; [abstract]. (*In Instit. civ. eng. Min. of proc.* 88:498. 1887.)
Original paper in *Ingegneria civile*, 1886. pp. 161-165. 1 pl.
- 1262 **Sadasewjee, Jagannath.** Barodo waterworks. (*In Instit. civ. eng. Min. of proc.* 115:43-52. pl. 1894.)
- 1263 **Sadler, Ralph.** On the flow of water in earthen channels. (*In Instit. civ. eng. Min. of proc.* 103:273-277. 1891.)
- 1264 **Saint-Venant, — de.** Mémoire sur la conservation et l'assainissement des étangs. (*In Ann. des ponts et chaussées: mém. et doc.*, 1849, semest. 1. pp. 307-333. pl.)
- 1265 **Salazar, A. E.** Kálkulos sobre las kañerías de agua; ensayo de unifikazion de las fórmulas usuales i de simplifikazion de los kálkulos basada en la nozion de zirkuito idráuliko. pp. 246. il. 8°. Santiago de Chile, Hume i k^a., 1898. W^G
- 1266 **Salbach, B.** Experiences had during the last twenty-five years with waterworks having an underground source of supply; translated from the German by Clemens Herschel. (*In Amer. soc. civ. eng. Trans.* 30:293-329. pl. 1893.)
Discussion on the paper is given, 30:690-701.
Prepared for the *International engineering congress of the Columbian exposition*, 1893.
- 1267 **Salis, Adolphe de.** Correction des torrents en Suisse. exposé raisonné d'ouvrages exécutés; rédigé par ordre du Département fédéral de l'intérieur. 2 v. pl. map. 4°. Berne, 1891, 1892. W^G
- 1268 — De l'aménagement des eaux en Suisse, organisation, travaux exécutés et systèmes de construction; traduit par Émile Cuénod. pp. 81. pl. 42. f°. Berne, 1884. W^G
- 1269 **Salles, Alfred.** Note sur les canaux d'irrigation du Piémont et de la Lombardie. (*In Ann. des ponts et chaussées: mém. et doc.*, 1884, semest. 2. pp. 308-314.)
- Salt Lake City, Utah.** See, for irrigation congress held at this place in 1891, *National irrigation congress*, Official report.
- 1270 **Sanborn, J. W.** Amount of water to be used in irrigation, (*In Utah agric. college exper. sta. Bulletin* 29. pp. 1-13. 1894.)
- 1271 — Early versus late irrigation. (*In Utah agric. college exper. sta. Bulletin* 23. pp. 11-14. 1893.)
- 1272 — Irrigation. pp. 8. 8°. [Salt Lake City], 1893. (*Utah agric. college exper. sta. Bulletin* 24.) W^A
CONTENTS—Influence of the use of varying amounts of water on the amount of crop.—Influence of the amount of water on percolation from the soil.—Influence of increased percolation of water on the fertility of the soil.—Whether irrigation waters to the extent of percolation adds to or takes from soil fertility.
- 1273 — Irrigation: early, late, and usual. pp. 8. 8°. [Salt Lake City], 1894. (*Utah agric. college exper. sta. Bulletin* 27.) W^A
- 1274 — Irrigation, night versus day irrigation. (*In Utah agric. exper. sta. Bulletin* 21. pp. 12-14. 1893.)
- 1275 — Sub-irrigation vs. surface irrigation, by Sanborn: Water for irrigation, by Samuel Fortier. pp. 28. 8°. [Salt Lake City], 1893. (*Utah agric. college exper. sta. Bulletin* 26.) W^A

- 1276 Sankey, R. H. Irrigation in Mysore. (*In Professional papers on Indian engineering.* 4:143-157; 212-224. il. map. 1867.)
Abridged from a report.
- 1277 *Sasse, O. Ueber die wasserabnahme in den bächen und strömen Deutschlands. 8°. Halle. 1880.
- 1278 Schubert, F. C. Landwirthschaftlicher wasserbau; handbuch für land- und forstwirth. cultur- und bautechniker. pp. 226. il. 8°. Berl., Niegardt, Hempel & Parey, 1879. W^P
- 1279 Schuyler, James Dix. Conditions and cost of water storage for irrigation on Gila river, Arizona; report for the benefit of Indians occupying Gila river reservation. pp. 17. 8°. [Wash., Govt., 1899.] (*U. S.—Interior. Dept. of the—Geological survey—Hydrography, Division of; U. S.—Senate.* 56th Cong. 1st sess. S. doc. 37. *In v. 4.*) W^A
- — — [Ed. 2 rev.]. pp. 19. 8°. [Wash., Govt., 1900.] (*U. S.—Interior. Dept. of the—Geological survey—Hydrography, Division of; U. S.—Senate.* 56th Cong. 1st sess. S. doc. 152. *In v. 10.*) W^A
- 1280 — Construction of the Sweetwater dam. (*In Amer. soc. civ. eng. Trans.* 19:201-232. pl. 1889.)
Paging includes discussion on the subject.
- — —; [abstract]. (*In Instit. civ. eng. Min. of proc.* 97:449-451. 1889.)
- 1281 — Problems of water storage on torrential streams of southern California as typified by Sweetwater and San Jacinto rivers. (*In U. S.—Agriculture. Dept. of—Experiment stations, Office of.* Report of irrigation investigations. pp. 353-395. 1901.)
- 1282 — Report on irrigation works and practice in Los Angeles and San Bernardino counties. (*In Cal.—Engineer department.* Report, 1880. pt. 4. Appendix A. pp. 3-60. 1880.)
- 1283 — Report on the works and practice of irrigation in Kern county. (*In Cal.—Engineer department.* Report, 1880. pt. 4. Appendix B. pp. 61-115. 1880.)
- 1284 — Report on the works and practice of irrigation in Yolo county. (*In Cal.—Engineer department.* Report, 1880. pt. 4. Appendix E. pp. 183-191. 1880.) W^G
- 1285 — Report on the works and practice of irrigation, San Joaquin and Kings river canal, and Chowchilla canal. (*In Cal.—Engineer department.* Report, 1880. pt. 4. Appendix D. pp. 162-182. 1880.) W^G
- 1286 — Reservoirs for irrigation. (*In U. S.—Interior, Dept. of the—Geological survey.* 18th Annual report, 1896-97. pt. 4. pp. 617-740. il. pl. maps. 1897.) W^A
- — —; [separate]. 4°.

Schuyler, James Dix.—Continued.

- 1287 ——— Reservoirs for irrigation, water-power, and domestic water-supply, with an account of various types of dams and the methods and plans of their construction. Ed. 1. pp. 414. il. maps. 4°. New York, John Wiley & sons, 1901. W^A W^C

Includes discussion of the available water supply for irrigation in various sections of arid America; the distribution, application, and use of water, the rainfall and run-off, evaporation from reservoirs; effect of silt upon reservoirs, etc.

- 1288 ——— Use of asphaltum for reservoir linings. (*In Amer. soc. civ. eng. Trans.* 27:629-639. 1892.)

Discussion on this paper is given, 28:130-143. 1893.

- 1289 ——— *and* Allardt, G. F. Culture of sugar cane: report on water supply for irrigation on the Honouliuli and Kahuku ranchos, island of Oahu, Hawaiian islands. pp. 32. map. 4°. Oakland, [B. F. Dillingham], 1889. W^G

Report made under the authority of B. F. Dillingham, Honolulu.

- 1290 Scott, Addison M. General notes on the Great Kanawha improvement, tripping bars and improved hurters on Chanoine wicket dams. (*In Amer. soc. civ. eng. Trans.* 31:539-551. pl. 1894.)

Paging includes discussion on the subject.

- 1291 Scott, John. Draining and embanking, a practical treatise embodying the most recent experience in the application of improved methods. pp. 133. il. 12°. Lond., Lockwood & co., 1883. (Scott's farm engineering text-books: Weale's ser.) W^P

——— Ed. 2. pp. 134. il. (pt. 1, *in his* Complete text-book of farm engineering. 1885.) W^A

- 1292 ——— Irrigation and water supply; a practical treatise on water-meadows, sewage irrigation and warping, the construction of wells, ponds, and reservoirs, and raising water by machinery for agricultural and domestic purposes. pp. 149. il. 12°. Lond., Lockwood & co., 1883. (Scott's farm engineering text-books: Weale's ser.) W^G W^P

——— (pt. 2, *in his* Complete text-book of farm engineering. 1885.) W^A

——— Ed 3. pp. 149. il. 12°. Lond., Lockwood & son, 1895. (Scott's farm engineering text-books: Weale's ser.) W^A

Scott-Moncrieff, Colin C. *See* Moncrieff, Colin C. Scott-.

- 1293 Scougall, H. Construction of canals for irrigating purposes and the reclamation of alkaline and saline lands. pp. 14. 8°. n. p., 1891.

Read before the Polytechnic society of Utah, March, 1891.

- 1294 ——— Modern ideas on irrigation. pp. 20. 8°. Salt Lake City, 1891. W^A

For the benefit of the Salt Lake irrigation congress committee, 1891.

- 1295 Sears, Alfred F. Reclamation of the arid lands of the valley of Piura, Peru, [and] Concession for irrigation of the lands to Alfred F. Sears, from the government of Peru. pp. 41. maps. 8°. Portland, 1891.

Sears, F. C. *See* Kansas agricultural experiment station—*Horticultural department*.

Seckendorff, A. von. *See*, as translator, Demoutzey, P.

- 1296 Seddon, James A. Mathematical analysis of the influence of reservoirs upon stream flow. (*In Amer. soc. civ. eng. Proc.* 24: 559-598. 1898; with discussion, *Trans.* 40: 401-427. 1898.)

This article is issued in connection with article by H. M. Chittenden on Reservoir system of the Great Lakes.

- 1297 ——— Monograph upon reservoirs and their effects on floods of the Mississippi system. (*In U. S.—War Dept.—Engineer department.* Preliminary examination of reservoir sites in Wyoming and Colorado. pp. 73-93. charts. 1898.)

——— pp. 26. charts. 8°. Wash., Govt., 1898.

———: [without charts]. (*In U. S.—War Dept.—Engineer department.* Report, 1898. pt. 4. pp. 2887-2907. 1898.)

- 1298 ——— River hydraulics. (*In Amer. soc. civ. eng. Proc.* 25: 619-669. il. 1899; with discussion, *Trans.* 43: 179-243. il. 1900.)

Shepard, James H. *See*, as chemist, South Dakota experiment station—*Chemistry and agriculture, Department of*.

Shunk, W. F. *See* New York aqueduct commission.

- 1300 Sim, D. Colleroon annicuts. (*In Madras Presidency—Public works department.* Colleroon annicuts; reports. 1859.)

Sind. *See* Bombay Presidency.

- 1301 Slichter, Charles Sumner. Theoretical investigation of motion of ground waters. (*In U. S.—Interior, Dept. of the—Geological survey.* 19th Annual report, 1897-98. pt. 2. pp. 295-384. il. pl. 1899.)

Contains bibliography on the subject.

——— (*In* King, Franklin Hiram. Principles and conditions of movements of ground water. pp. 295-384. il. pl. 1899.)

- 1302 Slosson, E. E. Water analyses. pp. 99-141. 8°. Laramie, 1895. (*Wyo. exper. sta. Bulletin* 24.) W^A

Contains analyses of irrigation waters.

- 1303 Smith, George Otis. Geology and water resources of a portion of Yakima county, Wash. pp. 68. il. pl. map. 8°. Wash. Govt. 1901. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 55.) W^A

——— (*U. S.—House of Representatives.* 57th Cong. 1st sess. H. doc. 55.) W^A

- 1304 Smith, Hamilton. Flow of water through pipes. (*In Amer. soc. civ. eng. Trans.* 12: 119-125. pl. 1883.)

- 1305 ——— Hydraulics; flow of water through orifices, over weirs, and through open conduits and pipes. pp. 362. il. pl. 17. f°. N. Y., J. Wiley & sons, 1886. W^P

- 1306 Smith, Isaac W. Flow of water in wrought and cast iron pipes from 28 to 42 inches in diameter. (*In Amer. soc. civ. eng. Trans.* 36: 197-216. 1897.)

Paging includes discussion and correspondence on the subject.

Smith, J. T. *See*, as editor, **Reports** on various professional subjects of the corps of engineers, Madras Presidency.

1307 Smith, J. Waldo. Experiments on the discharge of a 30-in. stop valve. (*In Amer. soc. civ. eng. Trans.* 34:235-246. il. 1895.)

1308 Smith, James. Remarks on thorough draining and deep plowing. Ed. 7. 31 pp. pl. 8°. Stirling, W. Drummond & sons, 1844. W^A

Extracted from third report of Drummond's agricultural museum.

1309 Smith, John. Essay on the advantages of watering pasture and meadow grounds in the Highlands. pp. 26. 8°. Edinburgh, Highland society of Scotland, n. d. W^G

Received highest premium offered by the Highland Society.

1310 *Smith, Richard Baird. Irrigation in southern India. 2 v. 8°. Lond., 1856.

1311 — Italian irrigation; report on the agricultural canals of Piedmont and Lombardy, addressed to the court of directors of the East India company. Ed. 2. Text 2 v. & atlas. 8° & f°. Edinburgh, Blackwood & sons, 1852. W^C

CONTENTS.—v. 1. Historical and descriptive.—v. 2. Practical and legislative. Appendix A, v. 1, gives a list of Italian authors on the history, practice, and legislation of irrigation in northern Italy. Appendix B, v. 1, is a sketch of the irrigation system of northern and central India. pp. 305-434.

— — — 1855.

W^A W^G W^P

1312 Smith, William. Observations on utility, form, and management of water meadows, and draining and irrigating of peat bogs. pp. 121. pl. 8°. Lond., John Harding, 1806.

W^A W^G

1313 Smythe, William E. Campaign for national prosperity. pp. 15. 8°. [Chicago, National irrigation committee, 1895.]

1314 — Colonial lectures; delivered in Willard Hall, Chicago, 1895. pp. 76. 8°. [N. Y., T. B. Wakeman, c1896.]

1315 — Conquest of arid America. pp. 325+[1]. pl. 12°. N. Y., Harpers & bros., 1900. W^A W^G

1316 — Irrigation problems of Honey lake basin, California. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 71-113. 1901.)

1317 Société du canal de Pierrelatte. Canal d'irrigation de Pierrelatte; notice descriptive. pp. 29. map. 8°. Paris, 1889. W^G
Exposition universelle de 1889.

Sonne, Ed. *See*, as joint author, **Franzius, Ludwig.**

1318 Soulé, Frank. Irrigation from the San Joaquin river. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 215-258. 1901.)

1319 South Dakota—Irrigation, State engineer of. First report; by Fred F. B. Coffin. pp. 64. il. 8°. Huron, State, 1890. W^A

- 1320 **South Dakota experiment station**—*Agriculture. Department of.* Irrigation. pp. 35. il. 8°. Brookings, 1891. (Bulletin 28.)
W^A
Luther Foster, director; Charles A. Duncan, irrigator.
- 1321 ——— *Chemistry and agriculture. Departments of.* Irrigation in South Dakota. pp. 32. il. 8°. Brookings, 1897. (Bulletin 52.)
W^A
James H. Shepard, chemist; E. C. Chilcott, agriculturist.
- 1322 **Specht, George J.** Description of the earthwork on the Upper San Joaquin canal, California; [abstract]. (*In Instit. civ. eng. Min. of proc.* 74:317-319. 1883.)
Original paper in *Wochenschrift des österreichischen ingenieur- und architecten-vereins*, 1883. p. 221.
- 1323 ——— Notes on earthwork. (*In Tech. soc. Pacif. coast. Trans.* 2:145-170. il. pl. 1885.)
- 1324 **Spon, Ernest.** Water supply: the present practice of sinking and boring wells, with geological considerations and examples of wells executed. Ed. 2. pp. 271. il. pl. 1. 12°. Lond., E. & F. N. Spon, 1885.
W^G
- **Stannard, J. D.** *See*, as joint author, Johnston, Clarence T.
- 1325 **Stanton, Robert Brewster.** Notes upon the construction of a water system for placer mining, and suggestions for a new method of dam building. (*In Amer. soc. civ. eng. Trans.* 35:70-101. il. pl. 1896.)
Construction of asphalt dams.
Paging given includes discussion on the subject.
- 1326 **Starling, William.** Discharge of the Mississippi river. (*In Amer. soc. civ. eng. Trans.* 34:347-492. il. chart. 1896.)
Discussion and correspondence on this paper is given, 35:305-370. 1896.
- 1327 **Stavelius, Frederico.** Report to the director-general of public works of the Argentine Republic on the present state of the San Roque water dam; [abstract]. (*In Instit. civ. eng. Min. of proc.* 112:419-421. 1893.)
Original paper in *Anales de la Sociedad científica argentina*, Buenos Ayres. il. Sept., 1892.
- 1328 **Stearns, F. P.** Experiments on the flow of water in a 48-inch pipe. (*In Amer. soc. civ. eng. Trans.* 14:1-18. il. 1885.)
Paging given includes discussion on the subject.
- 1329 ——— On the current-meter, together with a reason why the maximum velocity of water flowing in open channels is below the surface. (*In Amer. soc. civ. eng. Trans.* 12:301-338. pl. 1883.)
- 1330 **Stephens, George.** Practical irrigator and drainer. pp. 195. pl. il. 8°. Edin., Wm. Blackwood, 1834.
W^A W^G W^P W^C
- 1331 **Stephens, Henry.** Manual of practical draining. Ed. 2, enl. pp. 160. il. 8°. Edin., Wm. Blackwood & sons, 1847. W^A
——— ——— Ed. 3, rev. pp. 162. il. 8°. Edin., Wm. Blackwood & sons, 1848. W^P
- **Stevenson, Charles L.** *See* Utah irrigation commission.
- 1333 **Stevenson, David.** On reclamation and protection of agricultural land. pp. 70. il. 8°. Edin., A. & C. Black, 1874. W^A

Stevenson, David—Continued.

- 1334 ——— Principles and practice of canal and river engineering; revised by his sons, D. A. and C. A. Stevenson. Ed. 3. pp. 406. il. pl. 4°. Edin., A. & C. Black, 1886. W^G

- 1335 Stewart, Henry. Irrigation for farm, garden, and orchard. pp. 264. il. 12°. N. Y., Orange Judd co., [1877]. W^A W^P

——— [Ed. 2.] pp. 276. il. 12°. N. Y., Orange Judd co., 1889. W^G

——— 1890. W^A W^C

Stimson, E. K. *See*, as state engineer, 1881–82, Colorado—*Engineer department*, Biennial report.

- 1336 Stoddard, J. F. Irrawaddy delta survey; report of operations during 1869. (*In Professional papers on Indian engineering.* 7:352–378. pl. map. 1870.)

- 1337 Stolbrand, V. E. Irrigation in Arizona. pp. 14. 8°. Tucson, 1891. (*Ariz. agric. exper. sta. Bulletin* 3.) W^A

- 1338 Stone, T. W. Notes on water supply in new countries. pp. 42. pl. 18. 12°. Lond., E. & F. N. Spon, 1888. W^A W^G

- 1339 ——— Simple hydraulic formulæ. pp. 90. pl. 8. 12°. Lond., E. & F. N. Spon, 1881. W^G W^P

CONTENTS—Flow of water over weirs.—Discharge through orifices.—Through short tubes.—Flow through long pipes.—Flow from jets, and heights attained by different diameters of jet.—Flow through canals, rivers, aqueducts, etc.—Special formulæ for sluicing, etc.—Examples and tables.

- 1340 Stotherd, Charles Egremont. Irrigation works in the Jeypore state, Rajpu'ana, India. (*In Instit. civ. eng. Min. of proc.* 138:332–343. 1899.)

- 1341 Stout, O. V. P. Duty of water in Nebraska. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 149–158. pl. 1900.)

———; [separate, with other reports of investigations made in 1899]. pp. 149–248. il. pl. maps. 8°. [Wash., Govt., 1901.]

For contents, see **United States—Agriculture, Department of—Experiment stations, Office of,** Duty of water in Nebraska.

- 1342 ——— Water supply in Nebraska. pp. 153–172. il. 8°. Lincoln, 1895. (*Nebr. agric. exper. sta. Bulletin* 41.) W^A

- 1343 Strachan, James. Karachi waterworks. (*In Instit. civ. eng. Min. of proc.* 83:333–350. il. 1886.)

- 1344 Strachey, R. Irrigation of Sindh. (*In Professional papers on Indian engineering.* 4:278–295. 1867; 5:375–382. 1868.)

- 1345 Strange, William Lumisden. Reservoirs with high earthen dams in western India. (*In Instit. civ. eng. Min. of proc.* 132:130–272. il. pl. 1898.)

Paging includes discussion and correspondence on the paper.

- 1346 Straten Ponthoz, F. van der. État, progrès et avenir du drainage en France; de sa pratique et de son application dans le département de la Moselle. pp. 108. il. pl. 8°. Metz, Lamort, 1853. W^P

- 1347 **Stretch, Richard H.** Supplementary report on the Colorado desert and its surroundings. (*In James, I. E. Reports.* pp. 4-7. 1874.)

Strickland, T. P. *See also*, as joint author, **Barraclough, S. H.**

- 1348 **Stubbs, W. C.** Irrigation [of cane]. (*In La. sugar exper. sta.* 2d ser. Bulletin 14. pp. 354-359. 1892.)

- 1349 **Sullivan, Marvin E.** New method of determining coefficients of flow and of resistance in pipes and in open channels, and new formulæ for head, diameter, mean hydraulic radius, velocity, etc., based on this new theory. pp. 12. n. p., [1894].

Paper read before the American society of irrigation engineers, Denver, Colo., 1894.

- 1350 — **Sullivan's new hydraulics**, consisting of new hydraulic formulas and the rational law of variation of coefficients, flow and resistance to flow in all classes of rivers, canals, flumes, aqueducts, pipes, etc., with extensive tables and data of cost of pipes and trenching and pipe-line construction. pp. 301. 12°. Denver, Mining reporter press, 1900. W^G

Sumner, H. A. *See* as state engineer, 1895-96, **Colorado—Engineer department**, Biennial report.

- 1351 **Suttor, W. H.** Artesian bores on Bunda station in Queensland. (*In Roy. soc. N. S. W. Jour. and proc.* 1893. 27:376, 377. [1894.]

- 1352 **Swan, Charles H.** Note on Kutter's diagram. (*In Amer. soc. civ. eng. Trans.* 9:326, 328. 1880.)

Based on article on Flow of water in small channels by **R. Hering**, 8:1-14.

- 1353 — *and* **Horton, Theodore.** Hydraulic diagrams for the discharge of conduits and canals, based upon the formula of Gan-guillet and Kutter; with a description of the diagrams and their use by Theodore Horton. pp. 43. 8°. N. Y., Engineering news pub. co., 1899. W^A W^G W^C

- 1354 **Swendsen, George L.** Duty of water under Logan and Richmond canal. [Utah]. (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Use of water in irrigation; report. pp. 211-218. pl. map. 1900.)

— — (*In U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Duty of water in Nebraska. pp. 211-218. pl. map. 1901.)

- 1355 **Symes, George G.** Irrigation of the arid region of the United States: speech in the House of Representatives. September, 1888. pp. 16. 8°. [Denver, 1888.]

- 1356 **Symons, George James.** On the floods in England and Wales during 1875, and on water economy. (*In Instit. civ. eng. Min. of proc.* 45:1-18. pl. 1876.)

Discussion on rainfall, evaporation, and percolation is given, 45:48-105.

Tacoma and Yakima land company. *See United States—House of Representatives—Indian affairs, Committee on,* Right of way through Yakima Indian reservation.

- 1357 Taft, L. R. Irrigation for garden and greenhouse. (*In U. S.—Agriculture, Dept. of. Yearbook, 1895.* pp. 233-246. il. 1896.) W^A
- —; [separate]. 8°.
- —; [separate, with] Galloway, B. T. Health of plants in greenhouses. pp. 233-256. il. 8°. Wash., Govt., 1896.
- 1358 Target, John Lewis Felix. Experiments on a new form of module for irrigation purposes. (*In Instit. civ. eng. Min. of proc. 65:313-322.* 1881.)
- 1359 Tatham, William. National irrigation, or The various methods of watering meadows. pp. 427. pl. 8°. Lond., J. & T. Carpenter, 1801. W^G W^P
- Contains chapters on irrigation in Spain, America, France, and England.
- * — *French.* *Traité général de l'irrigation; traduit de l'anglais par de R.* 8°. Paris, 1803.
- 1360 Tavernier, René. Forces hydrauliques des Alpes en France, en Italie et en Suisse; rapport de mission. (*In Ann. des ponts et chaussées: mém. et doc., 1900, trimest. 2.* pp. 1-167. pl.)
- Statistique.—Mode d'utilisation.—Législation.
- 1361 Taylor, Thomas W. Austin dam. pp. 52. il. pl. 8°. Wash., Govt., 1900. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 40.) W^A
- — (*U. S.—House of Representatives.* 56th Cong. 2d sess. H. doc. 106. *In v. 63.*) W^A
- 1362 Technical society of the Pacific coast. Transactions. v. 1-10. 8°. San Francisco, 1884-1893. W^C
- Papers that relate to irrigation are entered in the list under their respective authors.
- 1363 Tenabe, Sakuro. Lake Biwa-Kioto canal. (*In Instit. civ. eng. Min. of proc. 117:353-359.* 1894.)
- 1364 Texas agricultural experiment stations. Report from Beeville station, soil, climate, water supply, irrigation equipment; [by J. H. Connell and S. A. McHenry]. pp. 927-958. il. pl. 8°. Austin, 1898. (*Bulletin 43.*) W^A
- Address College Station P. O., Texas.
- 1365 Texas state irrigation convention. Condensed report of proceedings, San Antonio, 1894. pp. 129. il. pl. 8°. [San Antonio, 1895.] W^A
- Thebus irrigation commission. *See Cape of Good Hope.—Public works, Department of, Report.*
- 1366 Thelwall, W. H. Failure of the Kali Nadi aqueduct on Lower Ganges canal. (*In Instit. civ. eng. Min. of proc. 95:283-290.* 1888.)
- Paper based on a series of reports and other official documents in *Selections from records of government of India.* no. 240. 1888.
- 1367 Thiéry, E. Note sur les barrages curvilignes. (*In Ann. des ponts et chaussées: mém. et doc., 1888, semest. 2.* pp. 87-98. il.)

- 1368 Thomas, B. F. Movable dams. (*In Amer. soc. civ. eng. Proc.* 24:71-212. il. pl. 1898; with discussion, *Trans.* 39:431-616. il. pl. 1898.)
- 1369 Thompson, A. H. Irrigable lands of Utah drained by the Colorado river and its tributaries. (*In U. S.—Interior, Dept. of the—Geological survey.* Report on lands of arid region of the United States, with a more detailed account of the lands of Utah. pp. 149-163. 1878.)
- 1370 ——— Report [of work of the topographic branch of the Irrigation survey]. (*In U. S.—Interior, Dept. of the—Geological survey.* 10th Annual report, 1888/89. pt. 2. pp. 65-77. 1890; 11th Annual report, 1889/90. pt. 2. pp. 293-343. 1891.) W^A
- 1371 ——— Report upon the construction of topographic maps and the selection and survey of reservoir sites in the hydrographic basin of the Arkansas river in Colorado. (*In U. S.—Interior, Dept. of the—Geological survey.* 13th Annual report, 1891/92. pt. 3. pp. 429-444. il. pl. 1893.) W^A
- 1372 ——— Report upon the location and survey of reservoir sites, year ended June 30, 1891. (*In U. S.—Interior, Dept. of the—Geological survey.* 12th Annual report, 1890/91. pt. 2. pp. 1-212. il. pl. 1891.) W^A
- 1373 ——— ———, year ending June 30, 1892. (*In U. S.—Interior, Dept. of the—Geological survey.* 13th Annual report, 1891/92. pt. 3. pp. 445-478. 1893.) W^A
- 1374 Thompson, John. Proportional water-meter, specially adapted to inferentially measure the total discharge of nozzles. (*In Amer. soc. civ. eng. Trans.* 24:528-539. 1891.)
Paging includes discussion on the subject.
- 1375 Tickell, R. P. Headworks of the Ganges canal; [abstract]. (*In Instit. civ. eng. Min. of proc.* 54:294-296. 1878.)
- Tillo, A. A. *See*, as president of commission, *Russia—Public works ministry.*
- Tivoli, V. de, jr. *See*, as translator, *Brisse, Alexandre.*
- 1376 Todd, James Edward. Geology and water resources of a portion of southeastern South Dakota. pp. 34. pl. maps, one in pocket. 8°. Wash., Govt., 1900. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 34.) W^A
- ——— (*U. S.—House of Representatives.* 56th Cong. 1st sess. H. doc. 663. *In v.* 73.) W^A
- 1377 *Tompkins, C. H., jr. Memorandum of data relating to value of irrigated lands, and prices of water rights. pp. 21. n. p., 1892.
- 1378 Torricelli, Giacomo. Dei grandi bacini per irrigazione e del serbatoio Grisanti sull'Enza nell'Emilia; considerazioni generali, progetto e cenni sui principali serbatoi della Spagna, dell'Algeria e della Francia. Text & plates [2 v.]. 8°. Roma. Tip. e lit. del Genio civile, 1885. W^G

Torricelli, Giacomo—Continued.

- 1379 — Notes upon the more important features of large reservoirs for irrigation; [abstract]. (*In* *Instit. civ. eng. Min. of proc.* 84:483-485. 1886.)

Original article in *Giornale del genio civile*, 1885. p. 611.

- 1380 — Sluices, scour-culverts, and waste-weirs for irrigation storage reservoirs; [abstract]. (*In* *Instit. civ. eng. Min. of proc.* 83:473-476. 1886.)

Original paper in *Giornale del genio civile*, 1885. pp. 74, 134.

— See also, as joint author, Zoppi, Giuseppe.

- 1381 Tournadre, — de. Description d'un barrage exécuté sur la rivière du Verdon et de la prise d'eau du canal du Verdon en Provence. (*In* *Ann. des ponts et chaussées: mém. et doc.*, 1872., [semest. 1]. pp. 428-455. pl.)

- 1382 — Notice sur le canal du Verdon. (*In* *Ann. des ponts et chaussées: mém. doc.*, 1881, semest. 2. pp. 15-101. pl.)

- 1383 *Toussaint, F. W. Die bodencultur und das wasser. Breslau, 1872.

- 1384 * — Technische und administrative instructionen über einleitung, ausführung und unterhaltung landwirtschaftlicher ent- und bewässerungsanlagen. Metz, 1875.

- 1385 Tranié, H. De l'arrosage pratique; canal d'irrigation de Lestelle (Haute-Garonne). pp. 33. pl. 3. 8°. Toulouse, Gimet, 1871. W^G

CONTENTS.—Etablissement des ouvrages de distribution d'eau.—Préparation du sol et de l'arrosage:—Résultats acquis par les arrosants.—Barrages automobiles pour réservoir d'eau et irrigations.

- 1386 — Irrigation works in the Haute-Garonne; [abstract]. (*In* *Instit. civ. eng. Min. of proc.* 42:276-278. 1875.)

Original paper in *Nouvelles annales de la construction*, May and June, 1875. 7 cols.

- 1387 Traphagen, F. W. Alkali in Montana. (*In* *Assoc. of Amer. agricultural colleges and experiment stations. Proc.*, 1899. pp. 72-74. 1900.)

Trautwine, John C., jr. See, as translator, Bazin, H.; as editor, Trautwine, John C., sr.

- 1388 Trautwine, John C., sr. Civil engineer's pocket-book; revised by John C. Trautwine, jr. Ed. 16. pp. 866. 16°. N. Y., Wiley & sons, 1894. W^A

- 1389 Travaglia, R. Serbatoi d'irrigazione in Sicilia. progetti di massima dell'ingegnere R. Travaglia; relazione. (*In* *Italy—Commissione idraulica. Irrigazione mediante serbatoi in Sicilia.*)

- 1390 Tremenheere, George Borlase. On public works in the Bengal Presidency. (*In* *Instit. civ. eng. Min. of proc.* 17:483-538. 1858.)

Paging includes discussion on the subject.

- 1391 Treuding, F. A. Ueber ent- und bewässerung der ländereien. Hannover, 1866.

- 1392 **Trevillini, Luigi.** Villoresi canal; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 82:416-418. 1885.)
Original paper in *Annuario scientifico ed industriale*, Milan, 1885. p. 480.
- 1393 **Tripp, William Blomfield.** South African rivers south of the Orange and Vaal. (*In* *Instit. civ. eng.* Min. of proc. 90:295-304. 1887.)
- 1394 **True, Alfred Charles.** [Work of Office of experiment stations in the west.] (*In* *Assoc. of amer. colleges and experiment stations.* Proc., 1899. p. 77. 1900.)
— *See also*, as editor, *Association American agricultural colleges and experiment stations.*
- 1395 **Tudsbery, John Henry Tudsbery.** Gauging of flowing water. (*In* *Instit. civ. eng.* Min. of proc. 80:318-329. il. 1885.)
Read at a meeting of students, Feb. 27, 1885.
- 1396 — *and* **Brightmore, A. W.** Principles of waterworks engineering. pp. 429. il. 8°. Lond., E. & F. N. Spon, 1893. W^G
— — Ed. 2. pp. 429+14. il. pl. 13. 8°. Lond., E. & F. N. Spon, 1897. W^G
- Turner, John Henry Tudsbery.** *See* **Tudsbery, John Henry Tudsbery.**
- 1397 **Turner, Nicholas.** Essay on draining and improving peat bogs, in which their nature and properties are fully considered. pp. 86. 8°. Lond., R. Baldwin and J. Bew, 1784. W^G
- 1398 **Tweeddale, W.** Irrigation for homesteaders in western Kansas. pp. 6. 8°. n. p., [1891]. W^A
- 1399 **Ulrich, J. C.** Irrigation in the Rocky mountain states. pp. 64. pl. map. 8°. Wash., Govt., 1899. (*U. S.—Agriculture, Dept. of—Experiment stations, Office of.* Bulletin 73.)
- Umatilla irrigation company.** *See* **United States—House of Representatives—Indian affairs, Committee on.**
- 1400 **Underhill, F. S.** [Wells and waters of North Dakota.] (*In* *U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry.* Preliminary investigation, etc. pp. 105-109. 1890.)
- 1401 **United States—Agriculture, Department of.** Artesian wells upon the Great plains; report of a geological commission appointed to examine a portion of the Great plains of the Rocky mountains, and report upon localities most favorable for experimental borings. pp. 38. map. 8°. Wash., Govt., 1882. W^A W^G
- Commissioners—C. A. White, Samuel Aughey, and Horace Beach.
Also bound in **United States—Department of Agriculture**, Special reports, v. 5.
- 1402 — — Climate, soil characteristics, and irrigation methods of California; by C. W. Irish. (*In* *Yearbook*, 1895. pp. 475-486. il. pl. 1896.)
— — —; [separate]. 8°.

United States—*Agriculture, Department of*—Continued.

- 1403 ——— [Facts and conditions surrounded and connected with the question of irrigation within the United States; letter from the Department to the president of the Royal commission on water supply.] (*In Victoria—Roy. comm. water supply.* First progress report. pp. 79–88. 1885.)
- 1404 ——— Irrigation for garden and greenhouse; by L. R. Taft. (*In Yearbook*, 1895. pp. 233–246. il. 1896.) W^A
 ——— ———; [separate]. 8°. W^A
 ——— ———; [separate, with] Galloway, B. T. Health of plants in greenhouses. pp. 232–256. il. 8°. Wash., Govt., 1896. W^A
- 1405 ——— Irrigation in the United States, [its extent and methods with digest of laws governing water supply]; report prepared by R. J. Hinton. pp. 240. maps. 8°. Wash., Govt., 1887. W^G
 ——— ——— ——— (U. S.—*Senate*. 49th Cong. 2d sess. S. mis. doc. 15. *In v.* 1.) W^A W^G
 Contains extended extracts from Irrigation in western America, by Alfred Deakin, entitled Australian report on American irrigation, pp. 197–222; also, information as to water supply and irrigation in Mexico furnished by the Mexican government, pp. 223–231.
 A second edition of this work, revised and enlarged, appears in United States.—*Senate—Irrigation and reclamation of arid lands, Select committee on*, Report.
- 1406 ——— Irrigation, its evils, the remedies, and the compensations; by George P. Marsh. (*In* [Annual] report, 1874. pp. 362–381. 1875.) W^A
 ——— ——— ——— pp. 22. 8°. [Wash., Govt., 1874.] (U. S.—*Senate*. 43d Cong. 1st. sess. S. mis. doc. 55. *In v.* 1.) W^A
- 1407 ——— Practical irrigation; by C. T. Johnson and J. D. Stannard. (*In Yearbook*, 1900. pp. 491–512. il. 1901.)
 ——— ——— ———; [separate]. 8°. W^A
- 1408 ——— Report on climatic and agricultural features . . . and needs of arid regions of Pacific slope, with notes on Arizona and New Mexico; by E. W. Hilgard, T. C. Jones, and R. W. Furnas, [commissioners]. pp. 182. 8°. Wash., Govt., 1882. W^A
 CONTENTS.—Climates of Pacific slope; by E. W. Hilgard.—Field crops and animal industries of Pacific coast; by T. C. Jones.—Miscellaneous field cultures; by E. W. Hilgard.—Standard sugar refinery, Alvarado, Cal.; by R. W. Furnas.—California wines and brandies; by E. W. Hilgard.—Raisin-making; by R. W. Furnas.—Orchard and small fruits.—Olive industry.—English walnuts.—Fruit canning.—Exotic fruits and useful plants; by E. W. Hilgard.—Insect pests.—Phylloxera in California; by E. W. Hilgard.—Quarantine rules.—Arizona and New Mexico; by R. W. Furnas.
 Also bound in United States.—*Agriculture, Department of*, Special reports, v. 5.
- 1409 ——— Rise and future of irrigation in the United States; by Elwood Mead. (*In Yearbook*, 1899. pp. 591–612. pl. 1900.)
- 1410 ——— *Artesian and underflow investigation and irrigation inquiry*. Preliminary investigation to determine proper location of artesian wells within the area of the 97th meridian and east of the foot-hills of the Rocky mountains; [prepared by Richard J. Hinton, special agent in charge]. pp. 398. il. pl.

United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry—Continued.

maps. 8°. Wash., Govt., 1890. (U. S.—Senate. 51st Cong. 1st sess. S. ex. doc. 222. In v. 12.) W^A

CONTENTS—Reports by R. J. Hinton, special agent in charge, E. S. Nettleton, supervising engineer, and Robert Hay, general field geologist; reports of the field geologists and field agents, G. E. Culver, G. E. Bailey, L. E. Hicks, P. H. Van Diest, E. T. Dumble, F. S. Underhill, S. G. Updike, F. F. B. Coffin, Horace Beach, J. W. Gregory, L. G. Carpenter, F. E. Roesler; tabulation of wells reported.

—; synopsis. pp. 7. 8°. [Wash., Govt., 1890.] (U. S.—Senate. 51st Cong. 1st sess. S. mis. doc. 179. In v. 4.) W^A

synopsis was made in advance of the report for the use of the U. S. Senate Committee on Irrigation.

- 1411 ——— Report of [R. J. Hinton] special agent in charge, 1890, 1891. (In U. S.—Agriculture, Dept. of. Report, 1890. pp. 471–488. map. 1890; same, 1891. pp. 439–450. map. 1892.) W^A

Each report also issued separately.

For later reports of Office of Irrigation inquiry, see **United States—Agriculture, Department of—Irrigation inquiry, Office of.**

- 1412 ——— Report on progress of irrigation investigation under deficiency appropriation act of 1890. pp. 337. pl. map. 8°. [Wash., Govt., 1891.] (U. S.—Senate. 51st Cong. 2d sess. S. ex. doc. 53. [pt. 1.] In v. 1.) W^A

—; [with title-page and title] Progress report on irrigation in the United States; prepared by R. J. Hinton. pt. 1. W^A W^G

CONTENTS—Irrigation in United States, progress report for 1890: by R. J. Hinton.—Progress report of artesian and underflow investigation: by Robert Hay.—Progress report of central division of the Great plains: by J. W. Gregory.—Progress of irrigation in the northwest: by Joseph W. Nimmo.—Irrigation statistics and progress in Colorado for 1890: by L. G. Carpenter.—Report on artesian water in Nevada: by Charles W. Irish.—Phreatic waters in Nye county, Nevada: by George Nichols.—Inhibition of rocks: by Robert T. Hill.—Cultivation of raisin grape by irrigation [in] California districts; condensed from treatise by Gustav Eisen.—Irrigation in Australia: by R. J. Hinton.—Notes of irrigation conference held at Melbourne, Victoria.—Notes on experience of other countries in administration of their water supply: by H. G. McKinney.—Irrigation theories and practices; translated from *Notions élémentaires théoriques et pratiques sur les irrigations appliquées aux terres en culture* . . . par J. Charpentier de Cossigny, adapted in part from report on water supply, Victoria, Australia: by Alfred Deakin.—Irrigation in France, Italy, and Spain.—Tillage and products of soil on irrigated lands; adapted from paper (1887) by Stephen Cureton.—Arizona as presented in Census bulletin, no. 35.—Alkali soils and waters in California; extracts from reports (1888–89); by E. W. Hilgard.—Appendix; copies of circulars and general letters sent out by Office of irrigation inquiry.

- 1413 ——— Report of progress of irrigation in November and December. pp. 14. il. maps. charts. 8°. [Wash., Govt., 1891.] (U. S.—Senate. 51st Cong. 2d sess. S. ex. doc. 53. pt. 2. In v. 1.) W^A

—; [with title-page and title] Progress report of artesian and underflow investigation between 97th degree of west longitude and the foothills of the Rocky mountains; prepared by E. S. Nettleton. pt. 2. W^A

- 1414 ——— [Final report.] 4pts. pl. maps. 8°. Wash., Govt., 1892. (U. S.—Senate. 52d Cong. 1st sess. S. ex. doc. 41. 4 pts. In v. 4.) W^A W^G

pt. 1, with title-page and title, Report on irrigation and cultivation of the soil thereby, with physical data, conditions, and progress within the United States for 1891; by R. J. Hinton, special agent in charge.

Accompanying reports—Preliminary report on possibilities of reclamation of arid regions of Kansas and Colorado by utilizing underlying waters. by Howard Miller.—Methods of applying water to land as practiced in central portions of California, by C. E. Grunsky.—Cultivation of soil by means of irrigation in some of the southern states.—Agricultural hydraulics; translated from the French of J. Charpentier de Cossigny.—Irrigation by artesian wells in Algiers.—Facts and conditions relating to irrigation in various countries; prepared by R. J. Hinton.—Extract from, extent and importance of ancient water supply and irrigation works, by F. S. Gipps.—Waterworks, east of arid region, having their supply from artesian and underflow sources, abstracts from *Manual of American waterworks, 1889–90.*

United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry—Continued.

pt. 2, with title-page and title, Final report of the chief engineer, Edwin S. Nettleton.

Accompanying reports.—Underground water surveys: Red river valley artesian basin; and Miles City, Montana, artesian basin; by W. W. Follett.—Report on geological character of certain sections of the state of Montana, showing possibility of imbibition of water which would be available for artesian purposes; by O. C. Morton.—Tabulation of artesian wells data; by B. S. La Grange.

pt. 3, with title page and title, Final geological reports of artesian and underflow investigation between 97th meridian of longitude and the foothills of the Rocky mountains, made by Robert Hay, chief geologist.

Accompanying reports:—Occurrence of artesian and other underground waters . . . ; by R. T. Hill.—Underflow and sheet waters, irrigable lands, and geological structure of Nebraska, with its effect upon water supply; by L. E. Hicks.—South Dakota; by G. E. Culver.

pt. 4, with title-page and title, Final report on the mid-plains division, by J. W. Gregory, special agent; and, Special report on certain artesian conditions in the state of South Dakota, by F. F. B. Coffin, engineer for South Dakota.

- 1415 — — — *Experiment stations, Office of.* Abstract of laws for acquiring titles to water from Missouri river and its tributaries, with legal forms in use; compiled by Elwood Mead. pp. 77. 8°. Wash., Govt., 1899. (Bulletin 60.) W^A

Contains water laws of Colorado, Kansas, Montana, Nebraska, South Dakota, Wyoming, and Northwest Territories of Canada.

- 1416 — — — Duty of water: general instructions to observers. pp. 4. il. 4°. [Wash., Govt., 1899.] (Irrigation investigation schedule 2.) W^A

- 1417 — — — Duty of water in Gallatin valley; by Samuel Fortier. pp. 175–196. il. pl. map. 8°. [Wash., Govt., 1901.] W^A

From bulletin 86, Use of water in irrigation; report.

— — — — — (In U. S.—Agriculture, Dept. of—*Experiment stations, Office of.* Duty of water in Nebraska. pp. 175–196. il. pl. map. 1901.)

- 1418 — — — Duty of water in Nebraska, by O. V. P. Stout; Duty of water under Amity canal, by Thomas Berry; Duty of water in Wyoming, by C. T. Johnson; Duty of water in Gallatin valley, by Samuel Fortier; Duty of water on Big Cottonwood creek, Utah, by R. C. Gemmell; Duty of water under Logan and Richmond canal, by George L. Swendsen; Duty of water as related to irrigation problems of Boise valley, Idaho, by D. W. Ross. pp. 149–248. il. pl. maps. 8°. [Wash., Govt., 1901.] W^A

From bulletin 86, Use of water in irrigation; report.

- 1419 — — — Irrigation in field and garden; by E. J. Wickson. pp. 40. il. 8°. Wash., Govt., 1901. (U. S.—Agriculture, Dept. of. Farmers' bulletin 138.) W^A

- 1420 — — — Irrigation in fruit growing; by E. J. Wickson. pp. 48. il. 8°. Wash., Govt., 1900. (Farmers' bulletin 116.) W^A

- 1421 — — — Irrigation in Hawaii; by Walter Maxwell. pp. 48. il. pl. 8°. Wash., Govt., 1900. (Bulletin 90.) W^A

- 1422 — — — Irrigation in humid climates; by F. H. King. pp. 27. il. 8°. Wash., Govt., 1896. (Farmer's bulletin 46.) W^A

- 1423 — — — Irrigation in New Jersey; by Edward B. Voorhees. pp. 40. il. 8°. Wash., Govt., 1900. (Bulletin 87.) W^A

United States—*Agriculture, Department of—Experiment stations, Office of—Continued.*

- 1424 ——— Irrigation in Rocky mountain states: by J. C. Ulrich. pp. 64. pl. map. 8°. Wash., Govt., 1899. (Bulletin 73.) W^A
- 1425 ——— Irrigation investigations. (*In U. S.—Agriculture, Dept. of.* Farmers' bulletin 97. pp. 27-29. 1899.) W^A
- 1426 ——— Irrigation investigations in California under the direction of Elwood Mead, assisted by William E. Smythe, Marsden Manson, J. M. Wilson, Charles D. Marx, Frank Soulé, C. E. Grunsky, Edward M. Boggs, and James D. Schuyler; [preliminary report of cooperative irrigation investigations in California of Office of experiment stations and California water and forest association]. pp. 73. 8°. Wash., Govt., 1901. (*U. S.—Senate.* 56th Cong. 2d sess. S. doc. 108. *In v. 5.*) W^A
- Summary report of the investigations of the department in California transmitted to Congress in response to Senate resolution of Jan., 1901. For full report, see *United States—Agriculture, Department of—Experiment stations, Office of.* Report of irrigation investigations in California.
- 1427 ——— Irrigation laws of the Northwest Territories of Canada and of Wyoming, with discussions by J. S. Dennis, Fred Bond, and J. M. Wilson. pp. 90. pl. maps. 8°. Wash., Govt., 1901. (Bulletin 96.) W^A
- CONTENTS—Water rights under Canadian northwest irrigation act; by J. S. Dennis.—Irrigation system of Wyoming; by Fred Bond and J. M. Wilson.
- 1428 ——— List of publications of the Office of experiment stations on irrigation. pp. 2. 8°. [Wash., Govt., 1900]. W^A
- [Ed. 2] rev. pp. 4. 8°. [Wash., Govt., 1901.] W^A
- 1429 ——— Notes on irrigation in Connecticut and New Jersey: by C. S. Phelps and Edward Voorhees. pp. 64. il. 8°. Wash., Govt., 1897. (Bulletin 36.)
- CONTENTS—Irrigation in Connecticut; by Phelps.—Irrigation in New Jersey; by Voorhees.
- 1430 ——— Proceedings of 13th annual convention of Association of American agricultural colleges and experiment stations, July 5-7, 1899; edited by A. C. True, W. H. Beal, and H. H. Goodell. pp. 112. 8°. Wash., Govt., 1900. (Bulletin 76.) W^A
- At the meeting of section on agriculture and chemistry, alkali and irrigation in the West were subjects of discussion. R. H. Loughridge, B. C. Buffum, F. W. Traphagen, L. G. Carpenter, A. C. True, Elwood Mead, E. J. Wickson, and A. J. McClatchie made short addresses.
- 1431 ——— Recent progress in the study of irrigation. (*In U. S.—Agriculture, Dept. of.* Farmers' bulletin 56. pp. 17-20. il. 1897.) W^A
- 1432 ——— Report of irrigation investigations in California under the direction of Elwood Mead, assisted by William E. Smythe, Marsden Manson, J. M. Wilson, Charles D. Marx, Frank Soulé, C. E. Grunsky, Edward M. Boggs, and James D. Schuyler. pp. 411. il. pl. maps. f°. Wash., Govt., 1901. W^A

Investigations were conducted by the Office of experiment stations in cooperation with the California water and forest association. A preliminary report giving a general summary of this report was transmitted to Congress and is numbered in the Congressional set 56th Cong. 2d sess., S. doc. 108.

United States—Agriculture, Department of—Experiment stations,
Office of—Continued.

CONTENTS—Agricultural situation in California; by Elwood Mead.—Irrigation problems of Honey lake basin, Cal.; by W. E. Smythe.—Features and water rights of Yuba river, Cal., by Marsden Marson.—Irrigation investigations on Cache creek; by J. M. Wilson.—Report on irrigation problems in Salinas valley; by C. D. Marx.—Irrigation from San Joaquin river; by Frank Soule.—Water appropriations from Kings river; by C. E. Grunsky.—Study of water rights on Los Angeles river, Cal.; by E. M. Boggs.—Problems of water storage on torrential streams of southern California as typified by Sweetwater and San Jacinto rivers; by J. D. Schuyler.—Recommendations of special agents and experts.

- 1433 ——— Reservoir system of Cache la Poudre valley; by E. S. Nettleton. pp. 48. pl. map. 8°. Wash., Govt., 1901. (Bulletin 92.) W^A
- 1434 ——— Statement of Elwood Mead [before Committee on irrigation of arid lands]. (*In U. S.—House of Representatives—Irrigation of arid lands, Committee on.* Hearings. pp. 88–108. 1901.)
- 1435 ——— Statement of Elwood Mead [before Committee on public lands]. (*In U. S.—House of Representatives. Public lands, Committee on.* Hearings. pp. 124–130. 1901.)
- 1436 ——— Subwatering greenhouse plants. (*In U. S.—Agriculture, Dept. of.* Farmers' bulletin 78. pp. 21–24. 1898.) W^A
- 1437 ——— Use of water for irrigation in Texas; Use of water in irrigation in Pecos Valley, by W. M. Reed; Use of water in irrigation in Arizona, by W. H. Code; Duty of water under Gage canal, Riverside, Cal., by W. Irving. pp. 83–148. pl. maps. 8°. [Wash., Govt., 1901.] W^A
From bulletin 86, Use of water in irrigation; report.
- 1438 ——— Use of water in irrigation; Discussion of investigations, by Elwood Mead; Computation of discharge records and preparation of diagrams, by C. T. Johnson. pp. 15–82. il. pl. 8°. [Wash., Govt., 1901.] W^A
From bulletin 86, Use of water in irrigation; report.
- 1439 ——— Use of water in irrigation in Wyoming and its relation to ownership and distribution of natural supply; by B. C. Buffum. pp. 56. pl. charts. 8°. Wash., Govt., 1900. (Bulletin 81.) W^A
- 1440 ——— Use of water in irrigation, report of investigations made in 1899 under supervision of Elwood Mead and C. T. Johnson; including reports by W. M. Reed [and others]. pp. 253. il. pl. maps. 8°. Wash., Govt., 1900. (Bulletin 86.) W^A
- (U. S.—House of Representatives. 56th Cong. 2d sess. H. doc. 466. *In v.* 43.) W^A
- CONTENTS—Discussion of investigations, by Elwood Mead.—Computation of discharge records and preparation of diagram, by C. T. Johnson.—Texas.—Use of water in irrigation in Pecos valley, N. Mex., by W. M. Reed.—Use of water in irrigation in Arizona; by W. H. Code.—Duty of water under Gage canal, Riverside, Cal., by W. Irving.—Duty of water in Nebraska; by O. V. P. Stout.—Duty of water under Amity canal, Colo., by Thomas Berry.—Duty of water in Wyoming; by C. T. Johnson.—Duty of water in Gallatin valley, Mont., by Samuel Fortier.—Duty of water on Big Cottonwood creek, Utah, by R. C. Gemmell.—Duty of water under Logan and Richmond canal, Utah; by G. L. Swendsen.—Duty of water, irrigation problems of Boise valley, Idaho; by D. W. Ross.
- 1441 ——— Usefulness of reservoirs to agriculture in irrigated regions; report [by Elwood Mead]. pp. 14. il. 8°. [Wash., Govt., 1899.] (U. S.—Senate. 55th Cong. 3d sess. S. doc. 124. *In v.* 11.) W^A

United States—*Agriculture, Department of—Experiment stations, Office of—Continued.*

- 1442 ——— Water-right problems of Bear river; by Clarence T. Johnson and Joseph A. Breckons. pp. 40. pl. map. 8°. Wash., Govt., 1899. (Bulletin 70.) W^A
 CONTENTS—Water supply of Bear river and its diversion; by J. C. Johnson.—Interstate water rights in Bear river; by J. A. Breckons.
- 1443 ——— Water rights on Missouri river and its tributaries. by Elwood Mead; with papers on water laws of Colorado, by John E. Field, and of Nebraska, by J. M. Wilson. pp. 80. il. maps. Wash., Govt., 1899. (Bulletin 58.) W^A
- 1444 ——— *Forestry, Division of.* Statement of Gifford Pinchot [on forest preservation as related to conservation of water supply; before Committee on irrigation of arid lands]. (*In U. S.—House of Representatives—Irrigation of arid lands, Committee on.* Hearings. pp. 72-74. 1901.)
- 1445 ——— Statement of Gifford Pinchot [on forest preservation as related to conservation of water supply before Committee on public lands]. (*In U. S.—House of Representatives—Public lands, Committee on.* Hearings. pp. 65-73. map. pl. 1901.)
- 1446 ——— *Irrigation inquiry, Office of.* Abstract of the laws of the several states and territories on irrigation and water rights; compiled by O. A. Critchett. pp. 180. 8°. Wash., Govt., 1893. (Bulletin 1.) W^A
- 1447 ——— Report of [C. W. Irish], special agent in charge, 1893-1895. 3d-[5th]. (*In U. S.—Agriculture, Dept. of.* Report, 1893. pp. 593, 594. 1894; same, [1894]. pp. 219-220. 1895; same, [1895]. pp. 183-185. 1895.) W^A
 Office was discontinued June 30, 1896.
 For earlier reports of this office, see United States—*Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry.*
- 1448 ——— *Soils, Division of.* Alkali lands; by Milton Whitney and Thomas H. Means. pp. 23. il. 8°. Wash., Govt., 1899. (Farmers' bulletin 88.) W^A
- 1449 ——— Alkali soils of Yellowstone valley from preliminary investigation of soils near Billings, Mont.; by Milton Whitney and T. H. Means. pp. 39. il. pl. 8°. Wash., Govt., 1898. (Bulletin 14.) W^A
- 1450 ——— *Weather bureau.* Daily river stages at river-gauge stations on the principal rivers of the United States. v. 1-6. 4°. Wash., Govt., 1890-1900. W^A
 CONTENTS—v. 1. *Stages of the Ohio river and of its principal tributaries, 1858 to 1889; compiled by Thomas Russell.—v. 2. *Stages of the Mississippi river and of its principal tributaries, except the Ohio river, 1860 to 1889; compiled by Thomas Russell.—v. 3. *Stages of water at miscellaneous river stations in California, Oregon, North Carolina, etc., 1875 to 1889; compiled by Thomas Russell.—v. 4. Daily river stages at river-gauge stations on the principal rivers of the United States for the years 1890, 1891, and 1892; by Thomas Russell.—v. 5. Same, for the years 1893, 1894, and 1895; by Park Morrill.—v. 6. Same, for the years 1896, 1897, 1898, and 1899; by H. C. Frankenfield.
 v. 1 of this series was published by the Signal service.
- 1451 ——— *Commission on the irrigation of the San Joaquin, Tulare, and Sacramento valleys, California.* Report. pp. 91. maps. 8°. [Wash., Govt., 1874.] (*U. S.—House of Representatives.* 43d Cong. 1st sess. H. ex. doc. 290. *In* v. 17.) W^A W^G
 COMMISSIONERS—B. S. Alexander, George H. Mendell, George Davidson.
 Chapter 4 gives the history, description, and statistics of irrigation in India, Italy, and France.

United States—Continued.

- 1452 — *House of Representatives—Agriculture, Committee on.* Arid lands of New Mexico; report to accompany H. R. 8058. pp. 3. 8°. [Wash., Govt., 1889.] (50th Cong. 2d sess. H. rp. 3934. *In v. 2.*) W^G W^A
Irrigation of the Jornada del Muerte. Report favors passage of bill with amendments.
- 1453 — — — Water-ditch in Utah; [adverse] report. 1 p. 8°. [Wash., Govt., 1878.] (45th Cong. 2d sess. H. rp. 224. *In v. 1.*) W^A
Report in reply to petition of citizens of Sevier county, Utah, asking aid of government in improving their lands.
- 1454 — — — *Foreign affairs, Committee on.* Equitable distribution of the waters of the Rio Grande; report to accompany H. res. 246. 1 p. 8°. [Wash., Govt., 1898.] (55th Cong. 2d sess. H. rp. 598. *In v. 3.*) W^A
Requests transmission of proceedings of International commission on equitable distribution of waters of Rio Grande river for which see United States—State, Department of, Equitable distribution of the waters of the Rio Grande.
- 1455 — — — *Indian affairs, Committee on.* Hudson reservoir and canal company; report to accompany H. R. 9029. pp. 3. 8°. [Wash., Govt., 1896.] (54th Cong. 1st sess. H. rp. 2049. *In v. 8.*) W^A
Report amending House bill 9029, to grant company right of way through Gila river reservation.
- 1456 — — — Right of way through Yakima Indian reservation; report to accompany H. R. 2015. p. 1. 8°. [Wash., Govt., 1894.] (53d Cong. 2d sess. H. rp. 714. *In v. 2.*) W^A
Passage of bill to grant right of way through Yakima reservation to Columbia irrigation company recommended, with amendments.
- 1457 — — — Right of way through Yakima Indian reservation; report to accompany H. R. 6854. p. 1. 8°. [Wash., Govt., 1894.] (53d Cong. 2d sess. H. rp. 1402. *In v. 4.*) W^A
Passage of bill recommended to grant right of way through Yakima reservation to Tacoma and Yakima land company for irrigation purposes.
- 1458 — — — Umatilla irrigation company; report to accompany H. R. 1969. 1 p. 8°. [Wash., Govt., 1894.] (53d Cong. 2d sess. H. rp. 355. *In v. 1.*) W^A
Report favoring bill to extend time for construction of ditch across Umatilla reservation.
- 1459 — — — *Irrigation of arid lands, Committee on.* Arid lands in the United States belonging to the government; report. pp. 4. 8°. [Wash., Govt., 1894.] (53d Cong. 2d sess. H. rp. 1152. *In v. 4.*) W^A
Report submitting House bill 7558 as substitute for House bill 7154.
- 1460 — — — Artesian wells in state of Colorado; report to accompany H. R. 6448. p. 1. 8°. [Wash., Govt., 1896.] (54th Cong. 1st sess. H. rp. 1996. *In v. 8.*) W^A
Favors appropriation of \$100,000 for artesian wells in eastern portion of Colorado.
- 1461 — — — Hearings before the committee relating to the reclamation of the arid lands of the United States, Jan., 1901. pp. 130. 8°. Wash., Govt., 1901. W^A
Contains statements of F. G. Newlands, F. H. Newell, G. H. Maxwell, N. H. Darton, F. W. Mondell, Gifford Pinehot, J. F. Wilson, Elwood Mead.

United States—*House of Representatives—Irrigation of arid lands, Committee on—Continued.*

- 1462 ——— Reclamation of arid lands; report to accompany H. R. 14241. 6 pts. 8°. [Wash., Govt., 1901.] (56th Cong. 2d sess. H. rp. 2927. 6 pts. *In v. 3.*) W^A
 CONTENTS—pt. 1. Report recommending bill; Views of R. D. Sutherland. pp. 9.—pt. 2. Views of the minority. pp. 10.—pt. 3. Views of T. H. Tongue. pp. 4.—pt. 4. Views of committee recommending substitute bill. pp. 12.—pt. 5. Report to accompany amendment to H. R. 14241. p. 1.—pt. 6. Views of W. H. King. pp. 2.
- 1463 ——— Reclamation of certain desert lands; report [amending] H. R. 13977. pp. 2. 8°. [Wash., Govt., 1901.] (56th Cong. 2d sess. H. rp. 2904. *In v. 3.*) W^A
- 1464 ——— Reservoir near San Carlos, Ariz.; report to accompany H. R. 3733. [to provide water for irrigation of Sacaton Indian reservation and other purposes]. pp. 2. 8°. [Wash., Govt., 1901.] (56th Cong. 2d sess. H. rp. 2934. *In v. 3.*) W^A
- 1465 ——— To aid in the reclamation of the arid lands; report to accompany H. R. 6710. pp. 2. 8°. [Wash., Govt., 1896.] (54th Cong. 1st sess. H. rp. 1437. *In v. 6.*) W^A
 Amends act making appropriations for sundry civil expenses, 1895.
- 1466 ——— Topographic surveys, etc., of arid lands; report to accompany H. R. 6246. pp. 6. 8°. [Wash., Govt., 1896.] (54th Cong. 1st sess. H. rp. 424. *In v. 2.*) W^A
- 1467 ——— *Irrigation of arid lands, Select committee on.* Arid lands of the United States; report to accompany H. R. 6790. pp. 12. 8°. [Wash., Govt., 1892.] (52d Cong. 1st sess. H. rp. 569. *In v. 2.*) W^A
 Bill favors ceding arid lands to the several states and territories wherein they are situate. Report includes views of the minority in protest against the bill.
- 1468 ——— Ceding arid lands to states and territories; report to accompany H. R. 12210. pp. 202. map. 8°. [Wash., Govt., 1891.] (51st Cong. 2d sess. H. rp. 3767. *In v. 4.*) W^A
 Contains extracts from report of L. M. Holt to California state board of irrigation; statements of J. W. Powell, Anson Mills, J. W. Gregory, C. E. Dutton, and E. S. Nettleton before the committee.
- 1469 ——— Irrigation of arid lands; international boundary; Mexican relations; report to accompany H. R. 3924. pp. 9. 8°. [Wash., Govt., 1890.] (51st Cong. 1st sess. H. rp. 490. *In v. 2.*) W^A
- 1470 ——— *Public lands, Committee on.* Arid and desert lands in Colorado; report to accompany H. R. 3857. 2 pts. pp. 3+4. 8°. [Wash., Govt., 1882.] (47th Cong. 1st sess. H. rp. 197. 2 pts.) W^A
 Bill proposes leasing of arid lands. Report presents the bill for consideration without recommendation. pt. 2 is report of the minority against the bill.
- 1471 ——— Colorado desert; report to accompany H. R. 417. pp. 26. 8°. [Wash., Govt., 1862.] (37th Cong. 2d sess. H. rp. 87. *In v. 4.*) W^A
 Report in reply to the legislature of the state of California asking the United States to cede to said state tract of land known as "Colorado desert." Correspondence on the subject is subjoined to report.
- ; [extracts]. (*In U. S.—House of Representatives—Public lands, Committee on.* Fresh water on Fort Yuma desert. pp. 3-9. 1878.)

United States—House of Representatives—Public lands, Committee on—Continued.

- — — — —; [extracts quoted]. (*In U. S.—House of Representatives—Public lands, Committee on.* Fresh water on Colorado desert. pp. 3-8. 1886.)
- 1472 — — — — — Fresh water on Colorado desert; report to accompany H. R. 3219. pp. 10. 8°. [Wash., Govt., 1886.] (49th Cong. 1st sess. H. rp. 1321. *In v. 5.*) W^A
Committee adopt report, **United States—House of Representatives—Public lands, Committee on**, Fresh water on Fort Yuma desert; 45th Cong. 2d sess. H. rp. 380. *In v. 2.*
- 1473 — — — — — Fresh water on Fort Yuma desert; report to accompany H. R. 3834. pp. 10. 8°. [Wash., Govt., 1878.] (45th Cong. 2d sess. H. rp. 380. *In v. 2.*) W^A
Contains extracts of the report and correspondence from **United States—House of Representatives—Public lands, Committee on**, Colorado desert.
- — — — —; [quoted entire]. (*In U. S.—House of Representatives—Public lands, Committee on.* Fresh water on Colorado desert. pp. 1-10. 1886.)
- 1474 — — — — — Hearings relating to reclamation and disposal of arid public lands of the west. Jan., 1901. pp. 135. il. pl. maps. 8°. Wash., Govt., 1901.
Contains statements of F. G. Newlands, Chas. D. Walcott, F. H. Newell, Gifford Pinchot, E. A. Hitchcock, R. D. Sutherland, N. H. Darton, G. H. Maxwell, J. C. Bell, and Elwood Mead.
- 1475 — — — — — National works in aid of irrigation; report to accompany H. R. 14280. pp. 9. 8°. Wash., Govt., 1901. (56th Cong. 2d sess. H. rp. 2954. *In v. 3.*) W^A
- 1476 — — — — — Reclamation of arid lands; report [amending] H. R. 9994. pp. 3. [Wash., Govt., 1898.] (55th Cong. 2d sess. H. rp. 1161. *In v. 4.*) W^A
- 1477 — — — — — Report to accompany H. R. 1984 [to provide for occupation of reservoir sites reserved by Geological survey]. pp. 2. 8°. [Wash., Govt., 1896.] (54th Cong. 1st sess. H. rp. 211. *In v. 1.*) W^A
- 1478 — — — — — Right of way through certain parks, etc.; report [favoring] H. R. 11973. pp. 2. 8°. [Wash., Govt., 1900.] (56th Cong. 1st sess. H. rp. 1850. *In v. 7.*) W^A
- 1479 — — — — — Right of way through parks, reservations, and other public lands; report [amending] H. R. 10225. pp. 2. 8°. [Wash., Govt., 1900.] (56th Cong. 1st sess. H. rp. 993. *In v. 4.*) W^A
- 1480 — — — — — Right of way through public lands for tram-roads, [canals, and reservoirs so as to include water for domestic, public, and other purposes]; report [favoring] H. R. 1595. pp. 2. 8°. [Wash., Govt., 1898.] (55th Cong. 2d sess. H. rp. 279. *In v. 2.*) W^A
Senate report on this bill is 55th Cong. 2d sess. S. rp. 600. *In v. 2.*
- 1481 — — — — — Right of way through public lands for tram-roads, [canals, reservoirs], etc.; report to accompany H. R. 9607. pp. 3. 8°. [Wash., Govt., 1897.] (54th Cong. 2d sess. H. rp. 2790. *In v. 3.*) W^A
- 1482 — — — — — Right of way through public lands; report to accompany H. R. 7828. 1 p. 8°. [Wash., Govt., 1894.] (53d Cong. 2d sess. H. rp. 1320. *In v. 4.*) W^A

United States—*House of Representatives—Public lands, Committee on—Continued.*

- 1483 ——— Sugar Loaf reservoir; report to accompany S. 2232. pp. 2. 8°. [Wash., Govt., 1896.] (54th Cong. 1st sess. H. rp. 2003. *In v. 8.*) W^A
Report favoring Senate bill 2232, to vacate Sugar Loaf reservoir site, Colorado, and restore lands to entry.
- 1484 ——— *Territories, Committee on.* Artesian wells for New Mexico and Arizona; report to accompany H. R. 7937. pp. 2. 8°. [Wash., Govt., 1888.] (50th Cong. 1st sess. H. rp. 793. *In v. 3.*) W^A
- 1485 ——— *Interior, Department of the.* Digest of the decisions of the supreme courts of the states and territories of the arid region and of the United States circuit and supreme courts in cases involving questions relative to use and control of water in that region; compiled by D. W. Campbell; revised and edited by W. C. Pollock. pp. 59. 8°. Wash., Govt., 1889. W^A W^G
This list has been further revised and enlarged by Hinton, Richard J., in his *Irrigation in the United States*. Ed. 2. pp. 329-358. 1890.
- 1486 ——— Irrigation of certain parts of Montezuma valley, lying within boundaries of Southern Ute Indian reservation. pp. 5. 8°. [Wash., Govt., 1898.] (U. S.—*Senate*. 55th Cong. 2d sess. S. doc. 124. *In v. 10.*) W^A
Letter from Secretary relative to the purchase of water rights from Montezuma valley canal company.
- 1487 ——— Report relative to the construction of certain dams in the Rio Grande. pp. 62. pl. 6. maps. 8°. [Wash., Govt., 1889.] (U. S.—*Senate*. 50th Cong. 2d sess. S. ex. doc. 144. *In v. 4.*) W^A
Contains correspondence and documents in relation to action of Mexican authorities in constructing at Paso del Norte certain wing-dams, and complaints caused thereby.
- 1488 ——— Statement on irrigation submitted [to Committee on public lands]. (*In U. S.—House of Representatives—Public lands, Committee on.* Hearings. pp. 74-76. pl. 1901.)
- 1489 ——— Supply of water for Southern Ute Indian reservation; report of J. G. Wright, U. S. Indian inspector, on Montezuma valley canal and its capacity for irrigating. pp. 6. map. 8°. [Wash., Govt., 1897.] (U. S.—*House of Representatives*. 55th Cong. 2d sess. H. doc. 152. *In v. 39.*) W^A
- 1490 ——— *Census, 1890.* Agriculture, irrigation in Arizona; by F. H. Newell. pp. 8. 8°. Wash., Govt., 1891. (Bulletin 35.)
———; [revised and greatly enlarged]. (*In his* Report on agriculture by irrigation. pp. 22-32.)
- 1491 ——— Agriculture, irrigation in Idaho; by F. H. Newell. pp. 26. 8°. Wash., Govt., 1892. (Bulletin 157.)
———; [revised and greatly enlarged]. (*In his* Report on agriculture by irrigation. pp. 136-156. pl. map.)
- 1492 ——— Agriculture, irrigation in Montana; by F. H. Newell. pp. 32. 8°. Wash., Govt., 1891. (Bulletin 153.)
———; [revised and greatly enlarged]. (*In his* Report on agriculture by irrigation. pp. 157-176. il. pl. map.)

United States—*Interior, Department of the—Census, 1890—Continued.*

- 1493 ——— Agriculture, irrigation in Nevada; by F. H. Newell. pp. 24. 8°. Wash., Govt., 1892. (Bulletin 163.)
 ———; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 177-192. il.)
- 1494 ——— Agriculture, irrigation in New Mexico; by F. H. Newell. pp. 14. 8°. Wash., Govt., 1891. (Bulletin 60.)
 ———; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 193-201.)
- 1495 ——— Agriculture, irrigation in Oregon; by F. H. Newell. pp. 26. 8°. Wash., Govt., 1892. (Bulletin 178.)
 ———; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 202-217. il.)
- 1496 ——— Agriculture, irrigation in Utah; by F. H. Newell. pp. 23. 8°. Wash., Govt., 1891. (Bulletin 85.)
 ———; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 218-235. il. pl. map.)
- 1497 ——— Agriculture, irrigation in Washington; by F. H. Newell. pp. 17. 8°. Wash., Govt., 1892. (Bulletin 198.)
 ———; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 236-247.)
- 1498 ——— Agriculture, irrigation [in western United States]; by F. H. Newell. pp. 22. maps. 4°. Wash., Govt., 1892. (Extra bulletin 23.)
- 1499 ——— Agriculture, irrigation in Wyoming; by F. H. Newell. pp. 15. 8°. Wash., Govt., 1891. (Bulletin 107.)
 ———; [revised and greatly enlarged]. (*In his Report on agriculture by irrigation.* pp. 248-256. map.)
- 1500 ——— Report on agriculture by irrigation in western part of United States at 11th census, 1890; by F. H. Newell. special agent. pp. 283. il. pl. maps. 4°. Wash., Govt., 1894. W^A
 Bound with reports on agriculture, irrigation, and fisheries.
 ———; [separate]. 1894.
 ——— (*In U. S.—House of Representatives.* 52d Cong. 1st sess. H. mis. doc. 340, pt. 20. *In v.* 50, pt. 10. 1896.) W^A
 ——— [Ed. 2.] pp. 336. il. pl. maps. Wash., Govt., 1894 [1896].
 Contains an appendix entitled Data concerning water supply, that brings the record up to date of publication.
- 1501 ——— *Geological and geographical survey of the territories.* Report on arable and pasture lands of Colorado; by Henry Gannett. *In* 10th Annual report, 1876. pp. 311-347. 1878. W^A

United States—*Interior, Department of the*—Continued.

- 1502 ——— *Geological survey.* American irrigation engineering; by H. M. Wilson. (*In* 13th Annual report, 1891-92. pt. 3. pp. 101-349. il. pl. 1893.) W^A
Contains list of books on irrigation.
- ——— ———; [separate]. 4°.
- 1503 ——— ——— Arid lands; statement before Committee on irrigation of the House of Representatives. (*In* U. S.—*Interior, Dept. of the—Geological survey.* 11th Annual report, 1889-90. pt. 2. pp. 203-289. 1891.) W^A
- 1504 ——— ——— Artesian well prospects in the Atlantic coastal plain region; by N. H. Darton. pp. 232. il. pl. maps. 8°. Wash., Govt., 1896. (Bulletin 138.)
- ——— ——— (U. S.—*House of Representatives.* 54th Cong. 2d sess. H. doc. 28. *In* v. 35.) W^A
- 1505 ——— ——— [Construction of reservoirs; letter in regard to bill S. 5833 and report.] (*In* U. S.—*Senate—Public lands, Committee on.* Construction of reservoirs, etc.; report amending S. 5833. pp. 5-7. 1901.)
- 1506 ——— ——— Dictionary of altitudes in the United States; by Henry Gannett. pp. 325. 8°. Wash., Govt., 1884. (Bulletin 5.)
- ——— ——— Ed. 2, [rev.]. pp. 393. 8°. Wash., Govt., 1891. (Bulletin 76.)
- ——— ——— Ed. 3, [rev.]. pp. 775. 8°. Wash., Govt., 1899. (Bulletin 160.)
- ——— ——— (U. S.—*House of Representatives.* 55th Cong. 3d sess. H. doc. 305. *In* v. 88.) W^A
- 1507 ——— ——— Effect upon certain rivers in Colorado of the diversion of water for irrigation; [report]. pp. 7. 8°. [Wash., Govt., 1889.] (U. S.—*Senate.* 50th Cong. 2d sess. S. ex. doc. 120. *In* v. 3.) W^A
- 1508 ——— ——— Engineering results of irrigation survey; by H. M. Wilson. (*In* 13th Annual report, 1891-92. pt. 3. pp. 351-427. pl. maps. 1893.) W^A
- ——— ———; [separate]. 4°.
- 1509 ——— ——— Estimates of necessary expenses of irrigation branch of the Survey for the fiscal year ending June 30, 1891, also calling attention to the report of the director, made last December. pp. 3. 8°. [Wash., Govt., 1890.] (U. S.—*House of Representatives.* 51st Cong. 1st sess. H. ex. doc. 326. *In* v. 35.) W^A
- ——— ———; additional estimate. pp. 3. 8°. [Wash., Govt., 1890.] (U. S.—*House of Representatives.* 51st Cong. 1st sess. H. ex. doc. 330. *In* v. 35.) W^A

United States—*Interior, Department of the—Geological survey—Continued.*

- 1510 ——— Gauging the streams and determining the water supply of the United States; letter from acting Secretary of the Treasury, transmitting estimate of appropriation for continuing work. pp. 3. 8°. [Wash., Govt., 1896.] (U. S.—*House of Representatives*. 54th Cong. 1st sess. H. doc. 257. *In v.* 58.) W^A
- 1511 ——— Geological reconnoissance in central Washington; by I. C. Russell. pp. 108. il. pl. maps. 8°. Wash., Govt., 1893. (Bulletin 108.) W^A
Investigation of Yakima river basin and vicinity with special reference to artesian resources.
- 1512 ——— Geological reconnoissance of northwestern Wyoming; by G. H. Eldridge. pp. 72. pl. map. 8°. Wash., Govt., 1894. (Bulletin 119.) W^A
- 1513 ——— Geology of Denver basin in Colorado; by Samuel Franklin Emmons, Whitman Cross, and George Homans Eldridge. pp. 556. il. pl. 4°. Wash., Govt., 1896. (Monographs. v. 27.) W^A
Contains description of artesian wells and structural conditions in vicinity of Denver.
- 1514 ——— Geology of Edwards plateau and Rio Grande plain adjacent to Austin and San Antonio, Texas, with reference to occurrence of underground waters; by Robert T. Hill and T. Wayland Vaughan. (*In* 18th Annual report, 1896/97. pt. 2. pp. 193–321. il. pl. maps. 1898.) W^A
———; [separate]. 4°.
- 1515 ——— Glacial Lake Agassiz; by Warren Upham. pp. 658. pl. maps. 4°. Wash., Govt., 1895. (Monographs. v. 25.) W^A
Chapter 10. Artesian and common wells of the Red river valley.—Chap. 11. Agricultural and material resources of the area of Lake Agassiz.
- 1516 ——— Hydrography of the arid regions; by F. H. Newell. (*In* 12th Annual report, 1890/91. pt. 2. pp. 213–361. il. pl. charts. 1891.) W^A
- 1517 ——— Irrigation in India; by H. M. Wilson. (*In* 12th Annual report, 1890/91. pt. 2. pp. 363–561. il. pl. 1891.) W^A
———; [separate]. 4° W^G
- 1518 ——— Irrigation survey; . . . estimate of appropriation for the survey of arid lands. pp. 2. 8°. [Wash., Govt., 1889.] (U. S.—*House of Representatives*. 50th Cong. 2d sess. H. ex. doc. 54. *In v.* 25.) W^G W^A
- 1519 ——— Irrigation upon Pima Indian reservation, Ariz.; report. pp. 5. 8°. [Wash., Govt., 1900.] (U. S.—*Senate*. 56th Cong. 1st sess. S. doc. 304. *In v.* 26.) W^A
- 1520 ——— Letter from the director of the Geological survey relative to gauging the streams and determining the water supply of the United States, including the investigation of underground currents and artesian wells in arid and semiarid sections. pp. 11. 8°. [Wash., Govt., 1896.] (U. S.—*Senate*. 54th Cong. 1st sess. S. doc. 187. *In v.* 7.) W^A

United States—*Interior, Department of the—Geological survey—*
Continued.

- 1521 ——— New developments in well boring and irrigation in eastern South Dakota, 1896; by Nelson Horatio Darton. (*In* 18th Annual report, 1896 97. pt. 4. pp. 561-615. il. pl. maps. 1897.) W^A
- ; [separate]. 4°.
- 1522 ——— Preliminary report on the artesian waters of a portion of the Dakotas; by Nelson Horatio Darton. (*In* 17th Annual report, 1895 96. pt. 2. pp. 603-694. il. pl. maps. 1896.) W^A
- pp. 92. il. pl. maps. 4°. Wash., Govt., 1896.
- 1523 ——— Preliminary report on the geology and water resources of Nebraska west of 103d meridian; by Nelson Horatio Darton. (*In* 19th Annual report, 1897 98. pt. 4. pp. 719-785. pl. maps. 1899.) W^A
- ; [separate]. 4°.
- 1524 ——— [Preliminary report on the organization and prosecution of the survey of the arid lands for purposes of irrigation.] pp. 12. 8°. [Wash., Govt., 1889.] (U. S.—Senate. 50th Cong. 2d sess. S. ex. doc. 43. *In* v. 1.) W^A
- 1525 ——— Principles and conditions of movements of ground water; by Franklin Hiram King. (*In* 19th Annual report, 1897-98. pt. 2. pp. 59-294. il. pl. 1899.) W^A
- ; [separate with], Theoretical investigation of motion of ground waters; by Charles Sumner Slichter. pp. 59-384. il. pl. 4°. Wash., Govt., 1899.
- 1526 ——— Public lands and their water supply; by F. H. Newell. (*In* 16th Annual report, 1894 1895. pt. 2. pp. 457-533. il. pl. maps, 1 in pocket. 1895.) W^A
- ; [separate]. 4°.
- 1527 ——— Report, in response to Senate resolution of Feb. 13, 1888, concerning the irrigation of certain lands. pp. 6. 8°. [Wash., Govt., 1888.] (U. S.—Senate. 50th Cong. 1st sess. S. ex. doc. 134. *In* v. 10.) W^A W^G
- In* reply to Senate resolution requesting the opinion of the Secretary of the Interior as to the desirability of authorizing the Geological survey to segregate lands of the public domain, capable of irrigation in the sections of the United States where irrigation is required, from other lands, and to lay out suitable places to be reserved for reservoirs, and rights of way for ditches and canals, for the purposes of irrigation.
- 1528 ——— Report in response to Senate resolution of March 27, 1888, relative to the reservoirs for storage of water in the arid regions of the United States. pp. 6. 8°. [Wash., Govt., 1888.] (U. S.—Senate. 50th Cong. 1st sess. S. ex. doc. 163. *In* v. [10].) W^G W^A
- 1529 ——— Report on lands of the arid region of the United States, with a more detailed account of the lands of Utah; by J. W. Powell. pp. 195. maps in pocket. 4°. Wash., Govt., 1878. (U. S.—House of Representatives. 45th Cong. 2d sess. H. ex. doc. 73. *In* v. 13.) W^A

CONTENTS—Physical characteristics of arid region.—Land-system needed.—Rainfall.—Water supply, by G. K. Gilbert.—Certain important questions relating to irrigable lands.—Lands of Utah.—Irrigable lands of Salt Lake drainage system, by G. K. Gilbert.—Irrigable lands of the valley of Sevier river, by C. E. Dutton.—Irrigable lands of Utah drained by Colorado river and its tributaries, by A. H. Thompson.—Land grants in aid of internal improvements, by Willis Drummond, jr.

United States—*Interior, Department of the—Geological survey—*
Continued.

* — — — — — Ed. 2. Wash., 1879.

- 1530 — — — — — Report relative to the use made of the appropriations for the irrigation survey. pp. 8. 8°. [Wash., Govt., 1890.] (U. S.—*Senate*. 51st Cong. 1st sess. S. ex. doc. 141. *In* v. 11.) W^A
- 1531 — — — — — Report upon the construction of topographic maps and selection and survey of reservoir sites in hydrographic basin of Arkansas river in Colorado; by A. H. Thompson. (*In* 13th Annual report, 1891'92. pt. 3. pp. 429-444. il. pl. 1893.) W^A
- 1532 — — — — — Report upon the location and survey of reservoir sites, during fiscal year ended June 30, 1891; by A. H. Thompson. (*In* 12th Annual report, 1890'91. pt. 2. pp. 1-212. il. pl. 1891.) W^A
- — — — —, during fiscal year ending June 30, 1892; by A. H. Thompson. (*In* 13th Annual report, 1891'92. pt. 3. pp. 445-478. 1893.) W^A
- 1533 — — — — — Reports of the director of the Geological survey and commissioner of the General land office relative to the selection of sites for reservoirs. pp. 8. 8°. [Wash., Govt., 1890.] (U. S.—*Senate*. 51st Cong. 1st sess. S. ex. doc. 199. *In* v. 11.) W^A
- 1534 — — — — — Reports on the investigations and survey for an international dam and reservoir on the Rio Grande del Norte, to preserve boundary between United States and Mexico by controlling flood waters of said river; by Anson Mills and W. W. Follett. pp. 86. map. charts. 8°. Wash., Govt., 1896.
Appended are congressional reports, hearings, etc., bearing on this subject.
- 1535 — — — — — Reports upon irrigation and reclamation of lands: in response to Senate resolution, April 20, 1892. pp. 73. 8°. [Wash., Govt., 1892.] (U. S.—*Senate*. 52d Cong. 1st sess. S. ex. doc. 100. *In* v. 6.) W^A
Contains reports from Census office and Geological survey in regard to the publications of these offices relative to irrigation matters and the expenses thereby entailed, with list of persons employed, etc.
- 1536 — — — — — Requisite and qualifying conditions of artesian wells; by Thomas C. Chamberlin. (*In* U. S.—*Interior, Dept. of the—Geological survey*. 5th Annual report, 1883'84. pp. 125-173. 1885.) W^A
- — — — —; [separate]. 4°.
- 1537 — — — — — Reservoirs for irrigation; by James D. Schuyler. (*In* 18th Annual report, 1896'97. pt. 4. pp. 617-740. il. pl. maps. 1897.) W^A
- — — — —; [separate]. 4°.
- 1538 — — — — — Results of stream measurements; by F. H. Newell. (*In* 14th Annual report, 1892'93. pt. 2. pp. 89-155. il. pl. 1894.) W^A

United States—*Interior, Department of the—Geological survey—*
Continued.

— — — — —: [separate]. 4°. 1895.

This report is the fifth of a series, preceding papers of which are: Hydrographic work. 10th Annual report, pt. 2. pp. 78-90.—Hydrography. 11th Annual report, pt. 2. pp. 1-110.—Hydrography of arid regions. 12th Annual report, pt. 2. pp. 213-361.—Water-supply for irrigation. 13th Annual report, pt. 3. pp. 1-99.

- 1539 — — — — — Statement of Chas. D. Walcott, [before Committee on public lands]. (*In U. S.—House of Representatives—Public lands, Committee on. Hearings relating to reclamation and disposal of arid public lands of the West. pp. 34-40. pl. 1901.*)
- 1540 — — — — — Statements by Director Powell and other officers of U. S. Geological survey. (*In U. S.—Senate—Irrigation and reclamation of arid lands, Select committee on. Report. pt. 5. pp. 5-224. 1890.*)
- 1541 — — — — — Statements of J. W. Powell and other officers of the U. S. Geological survey before House select committee on irrigation of arid lands. (*In U. S.—House of Representatives—Irrigation of arid lands in the United States, Select committee on. Ceding arid lands to states and territories. 1891.*)
- 1542 — — — — — Surveys of reservoir sites; report [by F. H. Newell. pp. 20. 8°. [Wash., Govt., 1899.] (*U. S.—Senate, 55th Cong. 3d sess. S. doc. 116. In v. 11.*) W^A
- 1543 — — — — — Theoretical investigation of motion of ground waters; by Charles Sumner Slichter. (*In 19th Annual report, 1897/98. pt. 2. pp. 295-384. il. pl. 1899.*) W^A
Contains bibliography.
- — — — — (*In King, Franklin Hiram. Principles and conditions of movements of ground water. pp. 295-384. il. pl. 1899.*)
- 1544 — — — — — Underground water of Arkansas valley in eastern Colorado; by Grove Karl Gilbert. (*In 17th Annual report, 1895/96. pt. 2. pp. 551-601. il. pl. 1896.*) W^A
— — — — —; [separate]. 4°. — — — — — pp. 51. il. pl. 4°. Wash., Govt., 1896.
- 1545 — — — — — Water resources of a portion of the Great plains; by Robert Hay. (*In 16th Annual report, 1894/1895. pt. 2. pp. 535-588. il. pl. maps. 1895.*) W^A
— — — — —; [separate]. 4°.
- 1546 — — — — — Water resources of Illinois; by Frank Leverett. (*In 17th Annual report, 1895/96. pt. 2. pp. 695-849. il. pl. maps. 1896.*) W^A
— — — — — pp. 155. il. pl. maps. 4°. Wash., Govt., 1896.
- 1547 — — — — — Water resources of the United States; communication relative to investigations being made, particularly of the arid regions. pp. 7. 8°. [Wash., Govt., 1900.] (*U. S.—Senate. 56th Cong. 1st sess. S. doc. 338. In v. 33.*) W^A

United States—*Interior, Department of the—Geological survey—*
Continued.

- 1548 ———— Water supply for irrigation; by F. H. Newell. (*In* 13th Annual report, 1891/92. pt. 3. pp. 1-99. il. pl. 1893.) W^A
- 1549 ———— *Hydrography, Division of.* Abstract of petitions, memorials, requests, and estimates relating to operations of office. pp. 71. 8°. Wash., Govt., 1901. (U. S.—*Senate.* 56th Cong. 2d sess. S. doc. 152. *In* v. 11.) W^A
- 1550 ———— Circular 1-7. 8°. [Wash., Govt., 1896-1899.]
- CONTENTS—Circular 1; Instructions for rain-fall observers of U. S. Geological survey. pp. 4. il. 1889.—Circular 2; Instructions for observing air temperature, humidity, and direction and force of wind. pp. 7. il. [1896?].—Circular 3; Vapor pressure, dew-point, and relative humidity tables adapted to whirled, or sling, psychrometer. pp. [4]. ob. 8°. n. d.—Circular 4; Instructions for measuring rate of evaporation from water surfaces. pp. 4. n. d.—Circular 5; Hydrographic survey [with bibliography of Survey publications relating to water supply]. pp. 10. [1896].—Circular 6; Annual reports, [information concerning,] and work of the Division. pp. 4. 1898.—Circular 7; Reservoir surveys. pp. 4. 1899.
- 1551 ———— Conditions and cost of water storage for irrigation on Gila river, Arizona; report of James D. Schuyler, for benefit of Indians occupying Gila river reservation. pp. 17. 8°. [Wash., Govt., 1899.] (U. S.—*Senate.* 56th Cong. 1st sess. S. doc. 37. *In* v. 4.) W^A
- [Ed. 2, rev.] pp. 19. 8°. [Wash., Govt., 1900.] (U. S.—*Senate.* 56th Cong. 1st sess. S. doc. 152. *In* v. 10.) W^A
- 1552 ———— Hydrographic surveys. pp. 10. 8°. [Wash., Govt., 1896.] (Circular 5.)
- Reports the progress and character of work of the Irrigation survey and of related investigations being carried on by the Division of hydrography. Also gives review of the legislation authorizing this work, with a list of publications of the Geological survey, showing results accomplished.
- 1553 ———— Methods of stream measurements. 8°. pp. 51. pl. 12. il. Wash., Govt., 1901. (Water-supply and irrigation papers. 56.) W^A W^G
- (U. S.—*House of Representatives.* 57th Cong. 1st sess. H. doc. 56.) W^A
- 1554 ———— Operations at river stations, 1897-1900; report. v. [1-15]. 8°. Wash., Govt., 1898-1901. (Water-supply and irrigation papers. 15, 16, 27, 28, 35-39, 47-52. W^A W^G
- (U. S.—*House of Representatives.* 55th Cong. 2d sess. H. doc. 510, 511. *In* v. 60; 55th Cong. 3d sess. H. doc. 297, 298. *In* v. 73; 56th Cong. 1st sess. H. doc. 721-725. *In* v. 73; 56th Cong. 2d sess. H. doc. 531-534, 553, 554. *In* v. 63.) W^A
- 1555 ———— Preliminary report by J. B. Lippincott, resident hydrographer, U. S. Geological survey, relating to stream measurements and reservoir surveys made in co-operation with the California water and forest association, 1900. pp. 48. 8°. n. p., [Cal. water and forest assoc., 1900].

To be followed by detailed publication with maps, diagrams, and views.

United States—*Interior, Department of the—Geological survey—Hydrography, Division of—Continued.*

- — — — —: [revised, with additional matter, entitled] Progress report of cooperative investigation by U. S. Geological survey and California water and forest association, 1900. pp. 38. 8°. [Wash., Govt., 1900.] (U. S.—*Senate*. 56th Cong. 2d sess. S. doc. 59. *In v.* 5.)
- 1556 — — — — — Report of progress, 1893 and 1894; by F. H. Newell, topographer in charge. pp. 126. 8°. Wash., Govt., 1895. (U. S.—*Interior, Dept. of the—Geological survey*. Bulletin 131.)
- — — — — (U. S.—*House of Representatives*. 54th Cong. 1st sess. H. doc. 416. *In v.* 79.) W^A
- 1557 — — — — — Report of progress, 1895; by Frederick Haynes Newell, hydrographer in charge. pp. 356. 8°. Wash., Govt., 1896. (U. S.—*Interior, Dept. of the—Geological survey*. Bulletin 140.)
- — — — — (U. S.—*House of Representatives*. 54th Cong. 2d sess. H. doc. 30. *In v.* 35.) W^A
- 1558 — — — — — Report of progress of stream measurements, 1896; by Arthur Powell Davis. (*In U. S.—Interior, Dept. of the—Geological survey*. 18th Annual report, 1896 97. pt. 4. pp. 1-418. il. pl. maps. 1897.) W^A
- — — — —; [separate]. 4°.
- 1559 — — — — — Report of progress of stream measurements, 1897, including papers by Dwight Porter, J. B. Lippincott, and other hydrographers; by F. H. Newell. (*In U. S.—Interior, Dept. of the—Geological survey*. 19th Annual report, 1897 98. pt. 4. pp. 1-632. il. pl. maps. 1899.) W^A
- — — — —; [separate]. 4°.
- 1560 — — — — — Report of progress of stream measurements, 1898; by F. H. Newell. (*In U. S.—Interior, Dept. of the—Geological survey*. 20th Annual report, 1898/99. pt. 4. pp. 1-562. il. pl. map. 1900.) W^A
- — — — —; [separate]. 4°.
- 1561 — — — — — Report on irrigation investigation for benefit of Pima and other Indians on Gila river reservation, Ariz.; by Arthur P. Davis, hydrographer. pp. 58. pl. maps. chart. 8°. Wash., Govt., 1897. (U. S.—*Senate*. 54th Cong. 2d sess. S. doc. 27. *In v.* 1.) W^A
- 1562 — — — — — Statement of Frederick H. Newell [before Committee on irrigation of arid lands]. (*In U. S.—House of Representatives—Irrigation of arid lands, Committee on*. Hearings. pp. 20-30; 43-61. 1901.)
- 1563 — — — — — Statement of Frederick H. Newell before Committee on public lands. (*In U. S.—House of Representatives—Public lands, Committee on*. Hearings. pp. 40-63. pl. 1901.)

United States—*Interior. Department of the—Geological survey—Hydrography, Division of—Continued.*

1564 ———— Water-supply and irrigation papers.
no. 1-56. il. pl. maps. 8°. Wash., Govt., 1896-1901.
W^A W^G

——— ([1-9.] U. S.—*House of Representatives.* 54th Cong. 2d sess. H. doc. 108, 342-346, 349-351; [10-18.] 55th Cong. 2d sess. H. doc. 301, 302, 453, 477, 509, 510, 511, 579, 580; [19-30.] 55th Cong. 3d sess. H. doc. 220, 277-283, 297-300; [31-39.] 56th Cong. 1st sess. H. doc. 119, 350, 351, 663, 721-725; [40-52.] 56th Cong. 2d sess. H. doc. 106, 484-488, 530-534, 553, 554; [53-56.] 57th Cong. 1st sess. H. doc. 53-56.) W^A

CONTENTS.

1. Pumping water for irrigation; by H. M. Wilson.
2. Irrigation near Phoenix, Ariz.; by A. P. Davis.
3. Sewage irrigation; by G. W. Rafter. [pt. 1.]
4. Reconnaissance in southeastern Washington, by I. C. Russell.
5. Irrigation practice on the Great plains; by E. B. Cowgill.
6. Underground waters of southwestern Kansas; by Erasmus Haworth.
7. Seepage water of northern Utah; by Samuel Fortier.
8. Windmills for irrigation; by E. C. Murphy.
9. Irrigation near Greeley, Colo.; by David Boyd.
10. Irrigation in Mesilla valley, N. Mex.; by F. C. Barker.
11. River heights for 1896; by A. P. Davis.
12. Underground waters of portion of southeastern Nebraska; by N. H. Darton.
13. Irrigation systems in Texas; by W. F. Hutton.
14. New tests of certain pumps and water lifts used in irrigation; by O. P. Hood.
15. 16. Operations at river stations, 1897; report. 2 pts.
17. Irrigation near Bakersfield, Cal.; by C. E. Grunsky.
18. Irrigation near Fresno, Cal.; by C. E. Grunsky.
19. Irrigation near Merced, Cal.; by C. E. Grunsky.
20. Experiments with windmills; by T. O. Perry.
21. Wells of northern Indiana; by Frank Lev-
erett.
22. Sewage irrigation; by G. W. Rafter. pt. 2.
23. Water-right problems of Bighorn moun-
tains; by Elwood Mead.
24. 25. Water resources of the state of New
York; by G. W. Rafter. 2 pts.
26. Wells of southern Indiana; by Frank Lev-
erett.
27. 28. Operations at river stations for 1898; re-
port. 2 pts.
29. Wells and windmills in Nebraska; by E. H.
Barbour.
30. Water resources of lower peninsula of
Michigan; by A. C. Lane.
31. Lower Michigan mineral waters; by A. C.
Lane.
32. Water resources of Puerto Rico; by H. M.
Wilson.
33. Storage of water on Gila river, Ariz.; by
J. B. Lippincott.
34. Geology and water resources of a portion of
southeastern South Dakota; by J. E. Todd.
- 35-39. Operations at river stations, 1899; report.
5 pts.
40. Austin dam; by T. W. Taylor.
41. 42. Windmill, its efficiency and economic
use; by E. C. Murphy.
43. Conveyance of water in irrigation canals,
flumes, and pipes; by Samuel Fortier.
44. Profiles of rivers in United States; by Henry
Gannett.
45. Water storage on Cache creek, Cal.; by
A. E. Chandler.
46. Physical characteristics of Kern river, Cal.;
by F. H. Olmsted, and Reconnaissance of Yuba
river, Cal.; by Marsden Manson.
- 47-52. Operations at river stations, 1900; report.
pts. 1-6.
- 53, 54. Geology and water resources of Nez
Perces county, Idaho; by I. C. Russell. 2 pt.
55. Geology and water resources of a portion of
Yakima county, Wash.; by G. O. Smith.
56. Methods of stream measurements.

1565 ———— *Irrigation survey.* Annual report. 1st.
(U. S.—*Interior, Dept. of the—Geological survey.* 10th An-
nual report, 1888/89. pt. 2. 1890.) W^A

Contains reports of work of topographic branch, by A. H. Thompson; and Report of hydro-
graphic work, by C. E. Dutton.

1566 ————, 2d. (U. S.—*Interior. Dept. of*
the—Geological survey. 11th Annual report, 1889 90. pt. 2.
1891.) W^A

Contains: Reports on hydrography and engineering; Statement of director of Geological
survey to House committee on irrigation; Report of work of topographic branch, by A. H.
Thompson; and Bibliography of irrigation, pp. 345-385.

1567 ————, 3d. (U. S.—*Interior, Dept. of*
the—Geological survey. 12th Annual report, 1890 91. pt. 2.
1891.) W^A

Contains: Report on reservoir sites, by A. H. Thompson; Hydrography of arid regions, by
F. H. Newell; Irrigation in India, by H. M. Wilson.

United States—*Interior, Department of the—Geological survey—
Irrigation survey—Continued.*

- 1568 ——— Annual report. [4th]. (U. S.—*Interior, Dept. of the—Geological survey.* 13th Annual report, 1891–92. pt. 3. 1893.) W^A
 CONTENTS—Water supply for irrigation; by F. H. Newell.—American irrigation engineering; by H. M. Wilson.—Engineering results of irrigation survey; by Wilson.—Report upon construction of topographic maps and selection and survey of reservoir sites in hydrographic basin of Arkansas river, Colorado; by A. H. Thompson.—Report upon location and survey of reservoir sites during fiscal year ending June 30, 1892; by Thompson.
- 1569 ——— *Indian bureau.* Irrigation for Pima Indians: part of report of Inspector W. H. Graves, [dated Sept. 12, 1900]. pp. 8. 8°. [Wash., Govt., 1901.] (U. S.—*Senate.* 56th Cong. 2d sess. S. doc. 88. In v. 5.) W^A
- 1570 ——— *Indian commissioners.* Irrigation on Indian reservations; by F. H. Newell. (In 28th Annual report, 1896. pp. 116–118. 1897.)
- 1571 ——— *Land office, General.* [Circular] F [to] registers and receivers [relating to note of reservation of right of way for railroads, canals, and reservoirs upon certificates for entries of lands subject to such right of way under acts of Mar. 3, 1875, and Mar. 3, 1891]. 1 p. 8°. [Wash., Govt., Nov. 27, 1896.]
 ——— (In U. S.—*Interior, Dept. of the.* Decisions of the Department of the interior and General land office relating to public lands. 23:458, 459. 1897.)
- 1572 ——— [Construction of reservoirs; letter in regard to bill. S. 5833.] (In U. S.—*Senate—Public lands. Committee on.* Construction of reservoirs, etc.; report amending S. 5833. pp. 1–5. 1901.)
- 1573 ——— Irrigation of public lands; letter in answer to a resolution of the House of 7th inst. [May], transmitting information [from General land office] relative to the most approved method of irrigation of public lands, etc. pp. 8. 8°. [Wash., Govt., 1868.] (U. S.—*House of Representatives.* 40th Cong. 2d sess. H. ex. doc. 293. In v. [17.]) W^A W^C
- 1574 ——— Letter recommending the reappropriation of the sum of \$1,000 appropriated by the sundry civil act of Aug. 18, 1894, for "Examination of desert lands." pp. 2. 8°. [Wash., Govt., 1896.] (U. S.—*Senate.* 54th Cong. 1st sess. S. doc. 198. In v. 7.) W^A
- 1575 ——— Letter relative to the appropriation for investigation as to the irrigation of arid lands. pp. 15. 8°. [Wash., Govt., 1890.] (U. S.—*Senate.* 51st Cong. 1st sess. S. ex. doc. 136. In v. 11.) W^A
- 1576 ——— Regulations concerning permission to use right of way over public lands for tramroads, canals, and reservoirs; approved Mar. 8, 1895. pp. 3. 8°. Wash., Govt., 1895.
- 1577 ——— Regulations concerning permission to use right of way over public lands for tramroads, canals, reservoirs, etc.; approved December 23, 1896. pp. 5. 8°. Wash., Govt., 1897.

United States—*Interior, Department of the—Land office, General—Continued.*

- — — — — (In U. S.—*Interior, Dept. of the.* Decisions of the Dept. of the interior and General land office relating to public lands. 23:519-522.)
- 1578 — — — — — Regulations concerning permission to use right of way over public lands for tramroads, canals, reservoirs, etc.; approved Sept. 17, 1898. pp. 7. Wash., Govt., 1898.
- — — — — (In U. S.—*Interior, Dept. of the.* Decisions of the Dept. of interior and General land office in cases relating to public lands. 27:495-499. 1899.)
- 1579 — — — — — Regulations concerning right of way for canals, ditches, and reservoirs over the public lands and reservations for irrigation; approved Feb. 20, 1894. pp. 17. 8°. Wash., Govt., 1894. W^G
- — — — — (In U. S.—*Interior, Dept. of the.* Decisions of the Dept. of interior and General land office in cases relating to public lands. 18:168-176. 1894.)
- — — — — pp. 17. 8°. 1896.
Reprint without change of regulations, 1894.
- — — — — pp. 17. 8°. 1897.
Reprint without change of regulations, 1894.
- 1580 — — — — — Regulations concerning right of way for canals, ditches, and reservoirs, over the public lands and reservations, for irrigation, oil pipe lines, [and] reservoirs for watering live stock; approved July 8, 1898. pp. 19. Wash., Govt., 1898.
- — — — — (In U. S.—*Interior, Dept. of the.* Decisions of the Dept. of interior and General land office in cases relating to public lands. 27:200-216. 1899.)
- 1581 — — — — — Regulations concerning selection of desert lands by certain states under act of Congress approved Aug. 18, 1894; approved Nov. 22, 1894. pp. 10. 8°. Wash., Govt., 1895.
- 1582 — — — — — Reports of the director of the Geological survey and the commissioner of General land office relative to sites for reservoirs. pp. 8. 8°. [Wash., Govt., 1890.] (U. S.—*Senate.* 51st Cong. 1st sess. S. ex. doc. 199. In v. 11.) W^A
- 1583 — — — — — Right of way granted for canals and reservoirs in certain states and territories under act of March 3, 1891. (In Annual report, 1895. pp. 266, 267. 1895.) W^A
- — — — —; [with additions]. (In same, 1896. pp. 231, 232. 1896.) W^A
- 1584 — — — — — [Rights of riparian owners along the waters of the Platte and Arkansas rivers in Kansas and Nebraska.] (In U. S.—*Interior, Dept. of the—Geological survey.* Effect upon certain rivers in Colorado of the diversion of water for irrigation; report. pp. 6, 7. 1889.)
- 26761—No. 41—02—10

United States—Continued.

- 1585 ——— *Senate—Agriculture and forestry, Committee on.* Report to accompany S. 2541 [for artesian wells in the arid districts of South Dakota, Nebraska, and Kansas]. 1 p. 8°. [Wash., Govt., 1895.] (53d Cong. 3d sess. S. rp. 944. *In v. 2.*)
Passage of bill recommended with amendments.
- 1586 ——— *Foreign relations, Committee on.* Equitable distribution of waters of Rio Grande [between United States and Mexico]; report to accompany S. 3794. pp. 8. 8°. [Wash., Govt., 1900.] (56th Cong. 2d sess. S. rp. 1755. *In v. 2.*)
W^A
- : memorial in re bill S. 3794, history of the Rio Grande dam and irrigation company and Elephant Butte dam case. with abstracts from decisions of United States courts relating to use of waters of non-navigable streams for irrigation purposes: [by Nathan E. Boyd]. pp. 24. 8°. [Wash., Govt., 1901.] (56th Cong. 2d sess. S. doc. 104. *In v. 5.*)
W^A
- 1587 ——— *Irrigation and reclamation of arid lands, Select committee on.* Report. 6 pts. (4 v.). il. maps. 8°. Wash., Govt., 1890. (51st Cong. 1st sess. S. rp. 928. 6 pts.).
W^A W^G
- CONTENTS—pt. 1. Report of committee [to accompany S. 2104], and views of minority. pp. 183.—pt. 2. (v. 1.) The northwest: [South Dakota, North Dakota, Montana, eastern Washington, eastern Oregon, Idaho]. pp. 459.—pt. 3. (v. 2.) The Great Basin region and California; [Utah, Nevada, California, Arizona]. pp. 573. il. pl. maps.—pt. 4. (v. 3.) Rocky mountain region and Great plains: [El Paso and Lower Rio Grande (Texas), New Mexico, Staked Plains (Texas), western Kansas, Colorado, Wyoming, western Nebraska. pp. 608. il. maps.—pt. 5. (v. 4.) Statements by Director Powell and other officers of Geological survey.—Consular reports.—Miscellaneous papers. pp. 384 maps.—pt. 6. [v. 4.] Irrigation in United States; by R. J. Hinton. pp. 386.
Part 6 is the 2d edition of 49th Cong., 2d sess., S. mis. doc. 15. It contains extended extracts from *Irrigation in western America*, by Alfred Deakin; also abstract of report made to colonial government of Victoria in 1887 by Deakin on the Nile valley. Appended is a Brief of decisions of the federal, state, and territorial courts upon control of water in the arid region.
- 1588 ——— Report to accompany S. 1644. 1 p. 8°. [Wash., Govt., 1890.] (51st Cong. 1st sess. S. rp. 401. *In v. 2.*)
W^A
- 1589 ——— *Public lands, Committee on.* Construction of reservoirs, etc.; report [amending] S. 5833 [to authorize construction of reservoirs for storage of water for reclamation of arid lands]. pp. 7. 8°. [Wash., Govt., 1901.] (56th Cong. 2d sess. S. rp. 2308. *In v. 3.*)
W^A
- Contains letters from the commissioner of General land office and the director of the Geological survey.
- 1590 ——— Report [favoring sinking of artesian wells in arid lands]; to accompany S. 768. pp. 2. 8°. [Wash., Govt., 1880.] (46th Cong. 2d sess. S. rp. 250. *In v. 1.*)
W^A
- 1591 ——— Report to accompany S. 1591 [to provide for reservation, sale, and settlement of arid lands]. pp. 4. 8°. [Wash., Govt., 1894.] (53d Cong. 2d sess. S. rp. 332. *In v. 5.*)
W^A
- 1592 ——— Right of way through public lands [for tram-roads, canals, and reservoirs so as to include water for domestic, public, and other purposes]; report [amending] H. R. 1595. pp. 2. [Wash., Govt., 1898.] (55th Cong. 2d sess. S. rp. 600. *In v. 1.*)
W^A

United States—Continued.

- 1593 ——— *State, Department of.* Canals and irrigation in foreign countries; reports from consuls of United States in answer to circulars from the Department of state. pp. 501. pl. maps. 8°. Wash., Govt., 1891. (Special consular reports. [v. 5.])
- (U. S.—*House of Representatives.* 51st Cong. 2d sess. H. ex. doc. 45. pt. 1. *In v.* 26.) W^A
- ———; [reissued with supplementary reports]. pp. 620. il. pl. maps. Wash., Govt., 1898. (Special consular reports. v. 5.)
- 1594 ——— Equitable distribution of the waters of the Rio Grande [between United States and Mexico]; reports of Secretary of state, Secretary of war, and Attorney-general, with accompanying papers. pp. 210. pl. maps. 8°. [Wash., Govt., 1898.] (U. S.—*Senate.* 55th Cong. 2d sess. S. doc. 229. *In v.* 21.) W^A
- CONTENTS—Correspondence touching protest of Mexican citizens against construction of dams by Rio Grande dam and irrigation company.—Correspondence touching proceedings of International commission on equitable distribution of waters of Rio Grande.—Study of use of water for irrigation on Rio Grande del Norte; by W. W. Follett.—Correspondence touching negotiation of treaty between United States and Mexico for construction of international dam in the Rio Grande.—Rio Grande dam and irrigation company v. Mesilla valley land and irrigation company; memoranda of papers on file in lands and railroads division of office of Secretary of interior.—Letter from Attorney-general stating that records of the Department of justice show no correspondence on subject,
- 1595 ——— Reports on irrigation from consuls of the United States. (*In U. S.—Senate—Irrigation and reclamation of arid lands, Select committee on.* Report. pt. 5. pp. 249–350. pl. map. 1890.)
- Reports from United States consuls in Mexico, Cuba, Central America, Venezuela, Ecuador, Chile, British Guiana, Argentine Republic, Hawaiian islands, China, Siam, Syria, Palestine, Philippine archipelago, New South Wales, South Africa, South Atlantic islands, Spain, France, Italy, Sicily.
- *See also, International water boundary commission.*
- 1596 ——— *Treasury department—Coast survey office.* Irrigation and reclamation of land for agricultural purposes, as now practiced in India, Egypt, Italy, etc., 1875. [by George Davidson]. pp. 73. pl. maps 6. 8°. [Wash., Govt., 1876.] W^A
- ———; [transmitted] in answer to Senate resolution, May 19, 1876. (U. S.—*Senate.* 44th Cong. 1st sess. S. ex. doc. 94. 1876.) W^G W^A
- *War department.* Equitable distribution of the waters of the Rio Grande. *See United States—State, Department of.*
- 1597 ——— *Engineer department.* Monograph upon reservoirs and their effects on floods of Mississippi system; by James A. Seddon. (*In U. S.—War Dept.—Engineer department.* Preliminary examination of reservoir sites in Wyoming and Colorado. pp. 73–93. charts. 1898.)
- ——— ——— pp. 26. charts. 8°. Wash., Govt., 1898.
- ——— ———; [without charts]. (*In U. S.—War Dept.—Engineer department.* Report, 1898. pt. 4. pp. 2887–2907. 1898.)

United States—War department—Engineer department—Continued.

- 1598 ——— Preliminary examination of reservoir sites in Wyoming and Colorado: report from [Hiram M.] Chittenden. pp. 110. pl. maps. charts. 8°. Wash., Govt., 1898. (U. S.—*House of Representatives*. 55th Cong. 2d sess. H. doc. 141. *In v.* 38.) W^G W^A
Includes Monograph upon reservoirs and their effects on floods of Mississippi system; by J. A. Seddon.
- (In U. S.—*War Dept.—Engineer department*. Report, 1898. pt. 4. pp. 2815–2922. pl. map. 1898.)
- ; [separate]. 8°.
- 1599 ——— *Signal office*. Irrigation and water storage in the arid region: report of [A. W. Greely] chief signal officer of army in response to House resolution, May 23, 1890. pp. 356. maps 37. 4°. Wash., Govt., 1891. (U. S.—*House of Representatives*. 51st Cong. 2d sess. H. ex. doc. 287. *In v.* 38.) W^A W^G
CONTENTS—Report on the climatology of the arid regions of the United States, with reference to irrigation, by Greely, and appendices containing reports on climate of Arizona, New Mexico, California, and Nevada, by W. A. Glassford, with tables of rainfall and temperature throughout this region.
For extracts of this report, see Greely, A. W., Report on climate of Arizona, Report on climate of California and Nevada, Report on climate of Colorado and Utah.
- 1600 ——— *Topographical engineers, Bureau of*. Report of the physics and hydraulics of the Mississippi river; by A. A. Humphreys and H. L. Abbot. pp. 456+xlvi. pl. 20. f°. Phila., J. B. Lippincott & co., 1861. (Professional papers no. 4. 1861.) W^G W^P
- 1601 Updike, Stephen G. [Artesian wells and basins of southeast portion of South Dakota.] (In U. S.—*Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry*. Preliminary investigation, etc. pp. 110–124. 1890.)
- 1602 Upham, Warren. Glacial lake Agassiz. pp. 658. il. pl. maps. 4°. Wash., Govt., 1895. (U. S.—*Interior, Dept. of the—Geological survey*. Monographs. v. 25.) W^A
Chap. 10. Artesian and common wells of the Red river valley.—Chap. 11. Agricultural and material resources of the area of Lake Agassiz.
- (U. S.—*House of Representatives*. 54th Cong. 1st sess. H. doc. 297. *In v.* 63.) W^A
- 1603 Utah—*Engineer department*. Biennial report of state engineer to the governor of Utah, 1897–98—1899–1900. il. 8°. Salt Lake City, State, 1899–1901. W^A
Robert C. Gemmell, state engineer.
- 1604 Utah agricultural college experiment station. Amount of water to be used in irrigation: [by J. W. Sanborn]. (In Bulletin 29. pp. 1–13. 1894.) W^A
- 1605 ——— Early versus late irrigation; by J. W. Sanborn. (In Bulletin 23. pp. 11–14. 1893.) W^A
- 1606 ——— Earthen dams; by Samuel Fortier. pp. 56. il. pl. 8°. Logan, State, 1896. (Bulletin 46.) W^A

Utah agricultural college experiment station—Continued.

- 1607 — Farm irrigation, by A. A. Mills; Orchard irrigation, by E. S. Richman. pp. 76. 8°. [Salt Lake City], 1895. (Bulletin 39.) W^A
- 1608 — Irrigation; [by J. W. Sanborn]. pp. 8. 8°. [Salt Lake City], 1893. (Bulletin 24.) W^A
 CONTENTS—Influence of the use of varying amounts of water on the amount of crop.—Influence of the amount of water on percolation from the soil.—Influence of increased percolation of water on the fertility of the soil.—Whether irrigating waters to the extent of percolation add to or takes from soil fertility.
- 1609 — Irrigation; early, late, and usual; [by J. W. Sanborn]. pp. 8. 8°. [Salt Lake City], 1894. (Bulletin 27.) W^A
- 1610 — Irrigation; night versus day irrigation; [by J. W. Sanborn]. (In Bulletin 21. pp. 12-14. 1893.) W^A
- 1611 — Preliminary report on seepage water and the underflow of rivers; by Samuel Fortier. pp. 35. 8°. [Salt Lake City], 1895. (Bulletin 38.) W^A
- 1612 — Sub-irrigation vs. surface irrigation; by J. W. Sanborn: Water for irrigation; by Samuel Fortier. pp. 28. 8°. [Salt Lake City], 1893. (Bulletin 26.) W^A
- 1613 — Value of natural waters for crop growth; by W. P. Cutter. (In Bulletin 22. pp. 8-12. 1893.) W^A
- 1614 — Water supply of Cache valley; by Samuel Fortier. pp. 50. il. pl. map. 8°. Logan, State, 1897. (Bulletin 50.) W^A
 CONTENTS—Loss due to evaporation.—Gain from seepage waters.—Capacities of the various canals.—Irrigating duty of water.
- 1615 Utah irrigation commission. Irrigation in Utah; report of the Irrigation commission to the 3d National irrigation congress, Denver, Sept., 1894. pp. 130. pl. 8°. Salt Lake City, 1895.
- 1616 — Irrigation statistics of the territory of Utah, with matters relative thereto; compiled and prepared by Charles L. Stevenson. pp. 36. 8°. Salt Lake City, 1891. W^A
 Prepared for the Irrigation congress at Salt Lake City, Sept., 1891.
- 1617 — Report of the Irrigation commission of the territory of Utah to the 3d National irrigation congress, Denver, Sept., 1894; compiled and prepared by C. L. Stevenson. pp. 24. 8°. Salt Lake City, 1894.
 — — (In Utah Irrigation commission. Irrigation in Utah. 1895.)
- 1618 Vallès, F. Projet de dessèchement et d'irrigation du lac de Grand-Lieu. (In Ann. des ponts et chaussées: mém. et doc., 1848, semest. 2. pp. 158-251.)
- 1619 Van Buren, John. Notes on high masonry dams. (In Amer. soc. civ. eng. Trans. 34:493-520. il. 1895.)
 Paging includes discussion and correspondence on the subject.
- 1620 Van Diest, P. H. Geological conditions of artesian basins in eastern Colorado and New Mexico. (In U. S.—Agriculture, Dept. of—Artesian and underflow investigation and irrigation inquiry. Preliminary investigation, etc. pp. 87-97. pl. maps. 1890.)

- 1621 Vauthier, L. L. Hydraulique des cours d'eau, barrages à encombrement et barrages en lit évasé, sans encombrement; note. (*In Ann. des ponts et chaussées: mém. et doc.*, 1900, trimest. 3. pp. 207-266.)
- Velasco, Felipe Ruiz de. *See Ruiz de Velasco, Felipe.*
- Vernon-Harcourt, Leveson Francis. *See Harcourt, Leveson Francis Vernon.*
- 1622 Victor, H. Notes on irrigation in the Bombay Presidency. (*In Professional papers on Indian engineering.* 5:114-126, 222-233. 1868.)
- 1623 Victoria—*Royal commission on water supply.* First and fourth progress reports: irrigation in western America and irrigation in Egypt and Italy: by Alfred Deakin. pp. 213. chart. 8°. Melbourne, Govt., [1887]. W^G
Memoranda for the members of the Royal commission on water supply.
- 1624 ——— First progress report: irrigation in western America, so far as it has relation to the circumstances of Victoria: by A. Deakin. pp. 88. f°. Melbourne, Govt., 1885. W^A
Memorandum for the members of the Royal commission on water supply.
Extracts from this report are contained in *United States—Agriculture, Department of. Irrigation in the United States, report: by R. J. Hinton.* Appendix 1. pp. 197-222. 1887.
- pp. 175. chart. 8°. Melbourne, Govt., 1885. W^G
- : [with fourth progress report entitled] First and fourth progress reports; . . . by Alfred Deakin. pp. 213. chart. 8°. Melbourne, Govt., [1887]. W^G
- 1625 ——— Fourth progress report: Irrigation in Egypt and Italy: by Alfred Deakin. pp. 64. f°. Melbourne, Govt., 1887. W^G
Memorandum for the members of the Royal commission on water supply.
- (*In Victoria—Roy. comm. water supply.* First and fourth progress reports. 1887.)
- 1626 ——— Further progress report: [July 9, 1885]. pp. 46. pl. 21. f°. Melbourne, Govt., 1885. (no. 19.) W^A W^G
CONTENTS—Report on some of the engineering features of American irrigation; by J. D. Derry.
- 1627 ———; August 31, 1885. pp. xl+302. f°. Melbourne, Govt., 1885. (no. 53.) W^A W^G
Contains report of the commission, extracts from minutes of committee, together with minutes of evidence, etc.
- 1628 ——— Irrigation report: Avoca valley. pp. 8. map. f°. Melbourne, Government, 1897. W^A W^G
- 1629 ——— *Water-supply department.* Annual general report, 1887-1891. 1st-5th. f° Melbourne, Govt., 1887-1891. W^A W^G
The first annual report is published under Department of mines and water supply.
- 1630 ——— Cohuna irrigation trust, reports, etc., upon proposed amendment of scheme: general report by [W. W.] Culcheth. pp. [12]. map. f°. Melbourne, Govt., 1887. W^G

Victoria—*Water-supply department*—Continued.

- 1631 ——— Conference of irrigationists; proceedings. 1890.
pp. 256. 8°. Melbourne, Govt., [1890]. W^A
Notes on this conference are in *United States—Agriculture, Department of—Artesian and underflow investigation and irrigation inquiry*, Report on progress of irrigation investigations. pp. 250-261. 1891.
- 1632 ——— Gaugings of the Murray river at Echuca, [1865-1886].
pp. [7]. f°. [Melbourne, Govt., 1887.] W^G
- 1633 ——— Goulburn weir and its dependent system of works;
a descriptive memorandum compiled from official records, by
Stuart Murray. pp. 15. pl. 25. maps. ob. f°. [Mel-
bourne], Govt., 1893. W^G
- 1634 ——— Loddon river weir and dam; schedule of quantities.
pp. 34-41. f°. n. p., n. d. W^G
- 1635 ——— Memorandum for the guidance of irrigation and
water-supply trusts constituted under act no. 898, and admin-
istering loans advanced for the construction of works. pp. 2.
f°. [Melbourne, Govt., 1887.] W^G
- 1636 ——— Memorandum for the guidance of irrigation trusts,
constituted under act no. 778, and administering loans advanced
for the construction of works under sec. 4 of act no. 859.
[1] p. n. p., 1886. W^G
- 1637 ——— Memorandum, table, and diagram in connection
with the discharge of water in open channels in earth. 3
sheets. f°. [Melbourne, Govt., 1886.] W^G
- 1638 ——— National works; contract at schedule of prices. [4v.]
f°. Melbourne, Govt., [1888]. W^G
CONTENTS—Form of tender, conditions of tendering, form of contract with documents
annexed, viz. specification, conditions of contract, and schedule of quantities, for the
construction of [various works specified on the several title-pages].
- 1639 ——— Proposed Bacchus marsh irrigation and water-supply
trust; first petition of landowners, together with engineering
reports, estimates, plans, and documents, as also the declaration
of the Minister of water supply thereon. pp. 7. maps. f°. W^G
Melbourne, 1888.
- 1640 ——— Proposed Bairnsdale irrigation and water-supply
trust; first petition for the constitution of an irrigation and
water-supply district, and for the appointment and creation of
a trust for the same. pp. 31. maps. f°. Melbourne, 1890. W^G
- 1641 ——— Proposed Buckley's swamp irrigation and water-
supply trust; first petition of landowners, together with engi-
neering reports, etc. pp. 10. maps. f°. Melbourne, 1888. W^G
- 1642 ——— Proposed Carrum irrigation and water-supply trust;
first petition, together with engineering reports, etc. pp. 25.
pl. maps. f°. Melbourne, 1890. W^G
- 1643 * ——— Proposed East Goulburn irrigation and water-
supply trust; first petition, together with engineering reports,
etc. pp. 36. maps. f°. Melbourne, 1889.

Victoria—*Water-supply department*—Continued.

- 1644 ——— Proposed Eastern Wimmera irrigation and water-supply trust; first petition of the Wimmera united water-works trust, together with engineering reports, etc. pp. 26. maps. f°. [Melbourne], 1890. W^A W^G
- 1645 ——— Proposed Echuca and Waranga irrigation and water-supply trust; first petition, together with engineering reports, etc. pp. 16. maps. f°. Melbourne, 1889. W^A W^G
- 1646 ——— Proposed Emu valley irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 12. maps. f°. Melbourne, 1888. W^G
- 1647 ——— Proposed Harcourt irrigation and water-supply trust; first petition, together with engineering reports, etc., thereon. pp. 11. map. f°. Melbourne, 1889. W^A W^G
- 1648 ——— Proposed Kerang East irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 11. maps. f°. Melbourne, 1889. W^A
- 1649 ——— Proposed Lake Charm irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 16. maps. f°. [Melbourne], 1888. W^A W^G
- 1650 *——— Proposed Lerderderg irrigation and water-supply trust; first petition, together with engineering reports, etc. pp. 10. map. f°. Melbourne, 1889.
- 1651 ——— Proposed Marquis Hill irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 14. maps. f°. Melbourne, 1888. W^G
- 1652 ——— Proposed Millewa irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 12. maps. f°. Melbourne, 1890. W^G
- 1653 ——— Proposed Mincha irrigation and water-supply trust; first petition for the constitution of an irrigation and water-supply district, and for the appointment and creation of a trust for the same. pp. 10. maps. f°. Melbourne, 1890. W^G
- 1654 *——— Proposed Myall irrigation and water-supply trust; first petition, together with engineering reports, etc. pp. 8. maps. f°. Melbourne, 1889.
- 1655 ——— Proposed North Boort irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 23. pl. f°. Melbourne, 1888. W^G
- 1656 ——— Proposed Pine Hills irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 10. pl. f°. Melbourne, 1888. W^G
- 1657 ——— Proposed Rochester irrigation and water-supply trust; first petition for the constitution of an irrigation and water-supply district, and for the appointment and creation of a trust for the same. pp. 9. pl. f°. Melbourne, 1889. W^A W^G

Includes engineer reports, estimates, etc.

Victoria—*Water-supply department*—Continued.

- 1658 ——— Proposed Rodney shire irrigation and water-supply trust; first petition for the constitution of an irrigation and water-supply district, and for the appointment and creation of a trust for the same. pp. 22. maps. f°. Melbourne, 1889. W^A W^G
Includes engineer reports, estimates, etc.
- 1659 ——— Proposed shire of Echuca irrigation and water supply trust; first petition, plans, reports, etc. pp. [14]. pl. f°. [Melbourne, 1887.] W^G
- 1660 * ——— Proposed Turrumberry irrigation and water-supply trust; first petition, together with engineering reports, etc. pp. 7. map. f°. Melbourne, 1889.
- 1661 * ——— Proposed Wandella irrigation and water-supply trust; first petition of landowners, together with engineering reports, etc. pp. 16. maps. f°. Melbourne, 1888. W^G
- 1662 ——— Report of [Stuart Murray] the chief engineer of water supply upon the Coliban system. pp. 16. f°. Melbourne, Govt., 1887. W^G
- 1663 ——— River gaugings; [report by Stuart Murray, chief engineer]. pl. maps. f°. [Melbourne, 1889, 1891, 1895.] W^A W^G
- 1664 ——— Schedule of works of Coliban scheme, showing cross sections and discharges on main channel from Malmsbury reservoir to Crusoe. pp. 59. ob. f°. n. p., n. d.
Stuart Murray, chief engineer.
- 1665 ——— Shire of Wimmera irrigation and water-supply trust; first petition of the shire of Wimmera waterworks trust, together with accompanying schedules, engineering reports, etc. pp. 24. pl. map. f°. Melbourne, 1887. W^G
- 1666 ——— Shire of Yarrawonga irrigation and water-supply trust; first petition of the shire of Yarrawonga waterworks trust, together with accompanying schedules, engineering reports, etc. pp. 14. maps. f°. Melbourne, 1888. W^G
- 1667 ——— Western irrigation channel, Goulburn district, contract no. 1; schedule of quantities. pp. 24. f°. n. p., n. d. W^G
- 1668 ——— Western Wimmera irrigation and water-supply trust; proposed amended scheme and reports thereon. pp. 16. map. f°. [Melbourne], 1890. W^A W^G
- 1669 Vidalin, F. *Pratique des irrigations en France et en Algérie*. Ed. 2. pp. 155. il. 12°. Paris, Librairie agricole de la Maison rustique, 1883. (Bibliothèque du cultivateur.) W^G
Ouvrage médaillé par la Société des agriculteurs de France.
- 1670 ——— Rhone irrigation canal; [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 48:315-318. 1877.)
Original paper in *Revue des deux mondes*. 19:920.
- 1671 Vigan. *Étude sur les irrigations des Pyrénées-Orientales, et en particulier sur un phénomène dit de la reproduction des eaux observé dans la vallée de la Tet*. (*In* *Ann. des ponts et chaussées: mém. et doc.*, 1866, [semest. 2]. pp. 314-379. pl.)

Vigan—Continued

— — pp. 70. pl. 8°. Paris, 1867.

- 1672 **Vignerte**, Benjamin, *and* **C.** A. Manuel juridique et pratique de l'irrigateur. pp. 152. pl. 5. 12° Paris, Desessart, 1846. W^G

- 1673 * **Vignotti**, A. Irrigations du Piémont et de la Lombardie. pp. 94. Metz, 1860.

Vigreux. *See*, as joint author, **Chauveau des Roches**, A.

- 1674 **Villeroy**, Félix, *and* **Muller**, Adam. Manuel de l'irrigateur; suivi du code des irrigations, par Bertin. pp. 380. il. 8°. Paris, Librairie agricole de la Maison rustique, [1850]. W^C

Table of contents of Manuel de l'irrigateur same as in their **Manuel des irrigations**. q. v.

- 1675 — Manuel des irrigations. Ed. 2. pp. 263. il. 12°. Paris, Librairie agricole de la Maison rustique, 1867. W^G

CONTENTS—pt. 1. De l'eau et de son action sur les diverses natures de sol.—pt. 2. Préparation du sol des prés arrosés.—pt. 3. Des travaux nécessaires pour disposer le sol à l'irrigation.—pt. 4. Des prés.

- 1676 **Vincent**, J. E. Matthew, *compiler*. Australian irrigation colonies on river Murray, in Victoria and South Australia. pp. 126. il. pl. map. f°. Lond., Chaffey bros., [1888]. W^A W^G W^P

- 1677 **Vincent**, L. Bewässerung und entwässerung der äcker und wiesen. Ed. 2. pp. 151. il. 12°. Berl., P. Parey, 1882. W^G

Vincent, Otto. *See also*, as joint author, **Abel**, Gustav.

- 1678 **Vischer**, Hubert, *and* **Wagoner**, Luther. On the strains in curved masonry dams. (*In* **Tech. soc. Pacif. coast.** Trans. 6: 75-151. il. 1889.)

Results of a set of calculations which were made mainly with reference to the Bear valley dam.

— —: [abstract]. (*In* **Instit. civ. eng.** Min. of proc. 101: 357, 358. 1890.)

- 1679 **Vitard**, A. Traité sur l'aménagement des eaux en général, sur les irrigations et sur le drainage; suivi de l'essai sur les chemins vicinaux. pp. 184. pl. 8°. Beauvais, C. Moisan, 1851. W^G

- 1680 **Voelcker**, John Augustus. Report on the improvement of Indian agriculture. pp. 460. maps. 8°. Lond., Eyre & Spottiswoode, [1893]. W^A

Chapter 6, on Water, discusses the need of irrigation in India and suggests recommendations for the same.

- 1681 **Voorhees**, Edward B. Irrigation in New Jersey. (*In* **Phelps**, C. S. Notes on irrigation in Connecticut and New Jersey. pp. 27-64. il. 1897.)

— — pp. 40. il. 8°. Wash., Govt., 1900. (**U. S.—Agriculture. Dept. of—Experiment stations, Office of.** Bulletin 87.) W^A

— *See also*, as director, **New Jersey state agricultural experiment station**.

- 1683 **Wagoner**, Luther. Notes on the Walnut Grove dam. (*In* **Tech. soc. Pacif. coast.** Trans. 5: 73-76. pl. 1888.)

— *See also*, as joint author, **Vischer**, Hubert.

- 1684 [Wahl, Ferdinand François de.] *Traité de l'elevation des eaux, enseignant ses principes et des maximes pour connoître, les justes proportions qui sont à observer dans la conduite des eaux.* pp. 232. pl. sq. 4°. Munic, Mathieu Riedl, 1716. W^P
- 1685 Wait, John Cassan. *Law of operations preliminary to construction in engineering and architecture.* Ed. 1. pp. 638. il. 8°. N. Y., J. Wiley & sons, 1900. W^A
 Chapters 5-14 discuss rights and privileges in the ownership of water and have direct bearing on the subject as regards irrigation.
- 1686 Walch, George T. *Engineering works of the Gódávári delta; descriptive and historical account.* Text & plates 2 v. 4°. Madras, Govt., 1896. W^G
 Compiled for the Madras government by the chief engineer for irrigation. The primary object of these works is irrigation.
- 1687 — *Engineering works of the Kistna delta; a descriptive and historical account.* Text & plates 2 v. map. pl. 4°. Madras, Govt., 1899. W^G W^C
 Compiled for the Madras government by the chief engineer for irrigation.
- Walcott, Charles Doolittle. *See, as director since 1894, United States—Interior, Department of the—Geological survey.*
- 1688 Walker, J. B. *Irrigation.* pp. 26. il. 8°. n. p., [1877]. W^G
 A paper read before the New Hampshire board of agriculture at a meeting holden at the Agricultural college, in Hanover, on the 23d day of Oct., 1877.
- 1689 Walker, J. P. H. *Sluices of the Mahanuddy anicut.* (*In Professional papers on Indian engineering.* 7:75-78. pl. 1870.)
- 1690 Wallace, Robert. *Lecture and articles on irrigation in India, America, Egypt, and Australia.* pp. 31. 8°. Edinburgh, Oliver & Boyd, 1898. W^A
- 1691 Warfield, A. G. *Report on irrigation in the Mussel slough and Fresno districts, in Tulare and Fresno counties.* (*In California—State engineer.* Report, 1880. pt. 4. Appendix C. pp. 116-161. 1880.) W^G
- 1692 Waring, George E. *Draining for profit, and draining for health.* pp. 244. il. 12°. N. Y., Orange Judd & co., [c1867]. W^A W^C W^G
 — — — Ed. 2, rev. pp. 252. il. 12°. N. Y., Orange Judd co., 1879. W^C
- 1693 Waring, Henry Robert. *Drainage, irrigation, and cultivation of the Albufera of Alcudia, Majorca; and application of the common reed as a material for paper.* (*In Instit. civ. eng. Min. of proc.* 52:243-249. 1878.)
- 1694 Wasell, Edward. *Manual of drainage for farmers and land owners.* pp. 70. 8°. Detroit, 1888. W^C
- 1695 Washington—*Arid lands commission.* Biennial report of the commissioner of arid lands to the governor of the state, 1896. 8°. Olympia, State, 1896.
- 1696 Washington agricultural experiment station—*Chemistry, Department of.* *Irrigation experiments in sugar-beet culture in the Yakima valley; [by] Elton Fulmer.* pp. 30. pl. map. 8°. Pullman, 1897. (*Bulletin* 31.) W^A

Water boundary commission, International. *See* International water boundary commission.

- 1697 **Water storage in Mexico**: [abstract]. (*In* *Instit. civ. eng.* Min. of proc. 136:389. 1899.)
Original paper in *Organ des Vereins der bohrtechniker*, Sept. 1, 1898. p. 8.
- 1698 * **Weber von Ebenhof, Alfred.** Gebirgs-wasserbau im alpinen Etsch-berken und seine beziehungen zum flussbau des ober-italienischen schwemmlandes. Text & atlas [2 v.]. Wien, 1892.
- 1699 **Wegmann, Edward.** Design and construction of masonry dams; giving the method employed in determining the profile of the Quaker bridge dam. pp. 106. pl. 59. f°. N. Y., Wiley & sons, 1888. W^P
- * ——— Ed. 2. pp. 112. pl. 4°. N. Y., Wiley & sons, 1889.
- Ed. 3. pp. 126. pl. 69. f°. N. Y., Wiley & sons, 1893. W^G
A new chapter and additional plates have been added in this edition in order to bring the descriptions given of dams constructed up to date.
- 1700 ———; including masonry, earth, rock-fill, and timber structures, also the principal types of movable dams. Ed. 4, rev. and enl. pp. 250. pl. 83. f°. N. Y., Wiley & sons, 1899. W^G
Contains bibliography.
- 1900. W^P
- 1701 **Weisbach, Ludwig Julius.** Application of mechanics to machines, hydraulics, and hydraulic motors; translated from the 4th augmented and improved German edition by A. Jay Du Bois. pp. 675. il. 8°. N. Y., Wiley & sons, 1889. (Manual of the mechanics of engineering and of the construction of machines. v. 2. sec. 2. pt. 1.) W^G
- 1702 ——— Die experimental-hydraulik; eine anleitung zur ausführung hydraulischer versuche im kleinen, nebst beschreibung der hierzu nöthigen apparate und entwicklung der wichtigsten grundformeln der hydraulik, sowie vergleichung der durch diese apparate gefundenen versuchsergebnisse mit der theorie und mit den erfahrungen im grossen. pp. 281. il. 8°. Freiberg, J. G. Engelhardt, 1855. W^G
- 1703 ——— *and* **Herrmann, Gustav.** Mechanics of pumping machinery; authorized translation from the 2d German edition; by Karl P. Dahlstrom. pp. 300. il. 8°. Lond., Macmillan & co., 1897. W^G W^P
- 1704 **Wells, Samuel.** Collection of the laws of the Bedford level corporation; with documents illustrative of the natural and artificial state of the several rivers, works of drainage, taxes, revenues, and other practical subjects connected with the proceedings of the adventurers, and illustrative also of the ancient and modern drainage of that extensive country called Bedford level. pp. 802. 8°. Lond., R. Pheney, 1828. W^C

Wells, Samuel—Continued.

- 1705 — History of the drainage of the great level of the fens, called Bedford level, with the constitution and laws of the Bedford level corporation. 2 v. & atlas. 4° & atlas 8°. Lond., R. Pheney, 1830. W^P W^C

- 1706 West, John. Irrigation and intense culture; a lecture. pp. 18. 12°. Numurkah, [1889]. W^A

Reprinted from the *Numurkah Standard*.

- 1707 West Virginia agricultural experiment station. Sub-irrigation in the greenhouse; by F. Wm. Rane. pp. 255–270. 8°. Charleston, State, 1893. (Bulletin 33.) W^A

- 1708 Western, J. H. Memo calculations concerning the Wady Rayan according to the latest survey. (*In Egypt—Public works ministry. Notes on the Wady Rayan.* pp. 13–25. 1888.)

- 1709 — Rules for rajbaha estimates, [or canal distributary, in connection with the Sirhind canal]. pp. [6.] [Lahore, Govt., 1885?] ([*Punjab—Public works department.*])

- 1710 Weston, Edmund B. Results of investigations relative to formulas for the flow of water in pipes. (*In Amer. soc. civ. eng. Trans.* 22:1–90. pl. 1890.)

Paging given includes discussion on the subject.

- 1711 *Wex, Gustav von. Hydrodynamik; entwicklung neuer, genauer formeln, berechnung der wasser-abflussmengen bei überfallwehren, grundschleusen, schützenöffnungen und bei wasser-ausleitungen in canäle, ferner mittheilungen über die neusten, diesbezüglich in America, in Oesterreich und in Italien im grossen maassstabe durchgeführten versuche. pp. 168. pl. 8°. Leipz., 1888.

- 1712 *—— Ueber die wasserabnahme in den quellen, flüssen und strömen bei gleichzeitiger steigerung der hochwässer in den culturländern. pp. 43. 7 pl. Wien, 1873.

*—— *English.* First treatise on the decrease of water in springs, creeks, and rivers; translated by G. Weitzel. pp. 58. 8°. Washington, 1881.

- 1713 *—— Zweite abhandlung über die wasserabnahme in den quellen, flüssen und strömen bei gleichzeitiger steigerung der hochwässer in den culturländern. pp. 29. 6 pl. Wien, 1879.

- 1714 Weyrauch, Jacob J. Calculation of dimensions as depending on the ultimate working strength of materials; translation from the German by George Rudolph Bodmer. (*In Instit. civ. eng. Min. of proc.* 63:275–296. 1881.)

Abstract of criticisms by H. Tresca and others on this work, contained in articles in *Résumé de la Société des ingénieurs civils*, Paris, 1881, pp. 228–337, is given in *Instit. civ. eng. Min. of proc.* 68:329–336. 1882.

—— See also Howe, Malverd A.

Wheeler, E. D. See, as commissioner, *Kansas—Forestry and irrigation, Commissioner of.*

- 1715 Wheeler, W. H. Drainage of fens and low lands by gravitation and steam power. pp. 175. pl. 8. 8°. Lond., E. & F. N. Spon, 1888. W^P

Wheeler, W. H.—Continued.

- 1716 — History of the fens of South Lincolnshire, being a description of the rivers Witham and Welland and their estuary, and an account of the reclamation, drainage, and enclosure of the fens adjacent thereto. Ed. 2, enl. pp. 489+[140]. pl. maps. 4°. Boston, J. M. Newcomb; Lond., Simpkin, Marshall & co., [1896]. W^P

First edition published in 1868.

There are eight appendices and index, each its own pagination, making a total of 140 pages.

White, C. A. *See*, as commissioner, **United States—Agriculture, Department of**, Artesian wells upon the Great plains; report of a geological commission.

- 1717 *Whiting, James Edward. Nira canal. 8°. [1883?]
— —: [abstract]. (*In* **Instit. civ. eng.** Min. of proc. 77:422, 423. 1884.)

- 1718 Whitney, Milton, and Means, T. H. Alkali lands. pp. 23. il. 8°. Wash., Govt., 1899. (**U. S.—Agriculture, Dept. of**. Farmers' bulletin 88.) W^A

- 1719 — Alkali soils of Yellowstone valley, from preliminary investigation of soils near Billings, Mont. pp. 39. il. pl. 8°. Wash., Govt., 1898. (**U. S.—Agriculture, Dept. of—Soils, Division of**. Bulletin 14.) W^A

- 1720 Wickson, Edward James. Irrigation in field and garden. pp. 40. il. 8°. Wash., Govt., 1901. (**U. S.—Agriculture, Dept. of**. Farmers' bulletin 138.)

- 1721 — Irrigation in fruit growing. pp. 48. il. 8°. Wash., Govt., 1900. (**U. S.—Agriculture, Dept. of**. Farmers' bulletin 116.) W^A

- 1722 — Notes on irrigation of deciduous fruits. (*In* **Assoc. Amer. agric. colleges and exper. sta.** Proc., 1899. pp. 80–83. 1900.)

- 1723 Wiggim, John. Practical essay on the most economical and effectual modes of underdraining. pp. 102. il. 16°. Lond., J. & W. Newman, 1847. W^P

- 1724 Wilcox, Lute. Irrigation farming; handbook for the practical application of water in the production of crops. pp. 311. il. 12°. N. Y., Orange Judd co., 1895. W^A W^G W^P W^C

- 1725 Willcocks, William. Egyptian irrigation; with introduction by J. C. Ross. pp. 27+367. il. pl. maps. 4°. Lond., E. & F. N. Spon, 1889. W^A W^G W^P

CONTENTS.—The Nile.—Upper Egypt.—Lower Egypt.—Drainage and land reclamation.—The barrages.—Nile in flood.—Engineering details.—Duty of water, and agricultural.—Administrative and legal.—Projects.—Low Nile floods in Upper Egypt.—Appendices.

— —: with introduction by Hanbury Brown. Ed. 2. pp. 27+485. il. pl. maps. 4°. Lond., E. & F. N. Spon, 1899.

- 1726 — Irrigation in Lower Egypt. (*In* **Instit. civ. eng.** Min. of proc. 88: 300–358; 90: 240–247. il. 1887.)

Paging includes discussion and correspondence on the subject.

- 1727 — The Nile. (*In* **Chicago, International meteorological congress.** Report. pp. 121–142. map. 1894.)

This report is Bulletin 11 of the Weather bureau, United States Department of agriculture.

- 1728 Williams, Cyrus John Richard. Floods in the Brisbane river, and system of predicting their heights and times. (*In Instit. civ. eng. Min. of proc.* 136: 268-281. il. 1899.)
- 1729 Wilson, Allan. On irrigation in India. (*In Instit. civ. eng. Min. of proc.* 27: 454-470. pl. 1868.)
Discussion on this subject, together with irrigation in Spain, is given, 27: 508-552. il. pl.
- 1730 Wilson, George. Draining and improving 1,500,000 acres of desert land. (*In Instit. civ. eng. Min. of proc.* 55: 234-240. 1879.)
Based on *Mémoire sur l'assainissement des landes de Gascogne*, by M. Chambrelent in *Ann. des ponts et chaussées: mém. et doc.*, 1878, semest. 2. pp. 157-239.
- 1731 ——— Irrigation in the south of France; department of the Bouches-du-Rhône. (*In Instit. civ. eng. Min. of proc.* 51: 213-236. pl. map. 1878.)
- 1732 Wilson, Herbert Michael. American irrigation engineering. (*In Amer. soc. civ. eng. Trans.* 25: 161-222. pl. 1891.)
Paging includes discussion on the subject. Abstract of this paper given in *Instit. civ. eng. Min. of proc.* 107: 470-473. 1892.
———; [revised and greatly enlarged]. (*In U. S.—Interior, Dept. of the—Geological survey.* 13th Annual report, 1891/92. pt. 3. pp. 101-349. il. pl. 1893.) W^A
Contains list of books on irrigation.
———; [separate]. 4°.
- 1733 ——— Engineering results of irrigation survey. (*In U. S.—Interior, Dept. of the—Geological survey.* 13th Annual report, 1891/92. pt. 3. pp. 351-427. pl. maps. 1893.) W^A
———; [separate]. 4°.
- 1734 ——— Irrigation in India. (*In Amer. soc. civ. eng. Trans.* 23: 217-260. pl. 1890.)
Paging given includes discussion on the paper.
———; [revised and greatly enlarged]. (*In U. S.—Interior, Dept. of the—Geological survey.* 12th Annual report, 1890/91. pt. 2. pp. 363-561. il. pl. 1891.) W^A
———; [separate]. 4°. 1892. W^G
- 1735 ——— Irrigation problem in Montana. pp. 19. 8°. n. p., [1889].
Lecture delivered before the National geographic society at Washington, Nov. 29, 1889. Published in *National geographic magazine.* v. 2, no. 3.
- 1736 ——— Manual of irrigation engineering. Ed. 1. pp. 351. il. 8°. N. Y., Wiley & sons, 1893. W^G W^C
——— 1895. W^A
——— Ed. 2, rev. pp. 538. il. 8°. N. Y., Wiley & sons, 1897.
- 1737 ——— Pumping water for irrigation. pp. 57. il. pl. 8°. Wash., Govt., 1896. (*U. S.—Interior, Dept. of the—Geological survey—Hydrography, Division of.* Water-supply and irrigation papers. 1.) W^A
——— (*U. S.—House of Representatives.* 54th Cong. 2d sess. H. doc. 108. *In* v. 70.) W^A

Wilson, Herbert Michael—Continued.

- 1738 ——— Water resources of Puerto Rico. pp. 48. il. pl. maps. 8°. Wash., Govt., 1899. (U. S.—*Interior, Dept. of the—Geological survey—Hydrography, Division of. Water-supply and irrigation papers.* 32.) W^A
- (U. S.—*House of Representatives.* 56th Cong. 1st sess. H. doc. 350. In v. 73.) W^A
- 1739 Wilson, J. F. Statement [before Committee on the irrigation of arid lands]. (In U. S.—*House of Representatives—Irrigation of arid lands, Committee on.* Hearings. pp. 74–81. 1901.)
- 1740 Wilsen, James Maxwell. Irrigation investigations on Cache creek. (In U. S.—*Agriculture, Dept. of—Experiment stations, Office of.* Report of irrigation investigations in California. pp. 155–191. 1901.)
- 1741 ——— Water laws of Nebraska. (In Mead, Elwood. Water rights on Missouri river and its tributaries. pp. 58–64. 1899.)
- See also, as joint author, Bond, Fred; also, as state engineer, 1897–98, *Nebraska—Irrigation, State board of.*
- 1742 Wilson, W. J. Memorandum on irrigation experiments on the Parichatgarh distributary, Anupshahr branch, Ganges canal. pp. 49. pl. f°. n. p., [1893]. (N. W. P. and Oudh—*P. w. d.—Irrigation branch.*
- 1743 Wise, David F. Practical tile draining for farmers; hand-book of information on all subjects relating to tile draining. pp. 55. il. 16°. Ashland, Ohio, D. F. Wise, 1891. W^C
- 1744 Wodon, Léon. Le droit des eaux et des cours d'eau. 2 v. 8°. Bruxelles, Bruylant-Christophe et cie., 1874. W^G
- CONTENTS—pt. 1. Des eaux en droit romain.—pt. 2. Des eaux sous l'ère féodale; Des eaux en droit moderne.
- 1745 ——— Répertoire général du droit des eaux et cours d'eau. pp. 172. 8°. Namur, Wesmael-Charlier, 1876. W^G
- Complément utile à Le droit des eaux et des cours d'eau.
- 1746 Wood, A. Pepys. Tanks and wells of New South Wales, water supply and irrigation. (In Roy. soc. N. S. W. Jour. and proc., 1883. 17: 149–182. 1884.)
- : [reprint]. (In N. S. W.—*Roy. comm. conservation of water.* First report. Appendix I. pp. 24–33. 1885.) W^A
- 1747 Wood, De Volson. On the flow of water in rivers. (In Amer. soc. civ. eng. Trans. 8: 173–178. 1879.)
- See also, as editor, Mahan, D. H.
- 1748 Works, John D. Paper on the irrigation laws and decisions of California. pp. 128. 8°. San Francisco, Bancroft-Whitney co., 1900. W^C
- 1749 Wright, J. George. Report on the Montezuma valley canal and its capacity for irrigating Southern Ute Indian reservation. pp. 6. map. 8°. [Wash., Govt., 1897.] (U. S.—*Interior, Dept. of the; U. S.—House of Representatives.* 55th Cong. 2d sess. H. doc. 152. In v. 39.) W^A

- 1750 **Wright, John.** Water conservation. (*In N. S. W.—Roy. comm. conservation of water.* First report. Appendix H. pp. 19–23. 1885.)

Paper read before the Engineering association of New South Wales, Mar. 23, 1882.

- 1751 **Wyoming—Engineer department.** Biennial report of state engineer, 1889–1900. pl. map. 8°. Cheyenne, 1890–1901. W^A

2d Annual report of the territorial engineer for the year 1889, covering the work of the department from its organization in April, 1886, to Nov. 30, 1889; by Elwood Mead. 1890.—1st Biennial report, 1891–92; by Mead. 1892.—2d Biennial report, 1893–94; by Mead. 1894.—3d Biennial report, 1895–96; by Mead. 1897.—4th Biennial report, 1897–98; by Mead. 1898.—5th Biennial report, 1899–1900; by Fred Bond. 1901.

Appendix to the 5th report contains water laws and amendments to same enacted in 1901.

- 1752 ——— Review of the work of the state engineer's office in 1895 and 1896 and progress of irrigation. pp. 35. 1 pl. 8°. Cheyenne, 1897. W^A

Extract from 3d Biennial report of state engineer.

- 1753 ——— *State board of control and special commission to select state lands.* Grazing lands in Wyoming; memorial pp. 4. 8°. [Wash., Govt., 1897,] (U. S.—Senate. 55th Cong. 1st sess. S. doc. 31. In v. 2.) W^A

Signed by Elwood Mead, J. A. Johnston, Edward Gillette, N. H. Brown, C. H. Priest.

- 1754 ——— *State board of land commissioners.* 1st Annual report of the State board of land commissioners of the state of Wyoming concerning the reclamation of arid lands; also a compilation of the statutes, rules, and regulations relating thereto, 1896. pp. 56+[1]. pl. 8°. Cheyenne, State, 1897.

- 1755 **Wyoming experiment station.** Alkali, some observations and experiments; by [B. C. Buffum]. pp. 219–253. pl. 8°. Laramie, 1896. (Bulletin 29.) W^A

——— Alkali studies, 2; by E. E. Slosson and B. C. Buffum. pp. 35–56. 8°. Laramie, 1898. (Bulletin 39.) W^A

——— ———, 3; by B. C. Buffum. pp. 40. il. (*In* 9th Report, 1899.) W^A

——— ———, 4; by E. E. Slosson. pp. 29. (*In* 9th Report, 1899.) W^A

- 1756 ——— Artesian wells of southern Wyoming, their history and relation to irrigation; by [J. D. Conley]. pp. 87–122. 8°. Laramie, 1894. (Bulletin 20.) W^A

- 1757 ——— Irrigation and duty of water; by B. C. Buffum. pp. 1–31. il. 8°. Laramie, 1892. (Bulletin 8.) W^A

- 1758 ——— Reclamation of arid lands, Harvey water motor, [a new invention for irrigation purposes; by A. A. Johnson]. pp. 47–72. il. 8°. Laramie, 1894. (Bulletin 18.) W^A

- 1759 ——— Water analyses; [by E. E. Slosson]. pp. 99–141. 8°. Laramie, 1895. (Bulletin 24.) W^A

Contains analyses of irrigation waters.

- 1760 **Ysabeau, A.** La science des campagnes; défrichements, irrigations et drainage. pp. 104. il. 16°. Paris, Paul Dupont, n. d. W^G

- 1761 **Yuma county** (*Arizona*), **Citizens' executive committee of**. Report of committee to the senatorial Committee on the irrigation and reclamation of arid lands. pp. 47. map. 12°. n. p. 1889. W^A
- 1762 **Zhilinski**, *Lieut.-Gen.* See, as chief officer of board, **Russia—Irrigation board**.
Zhizhemski. See **Jijemski**.
- 1763 **Zoppi**, Giuseppe, and **Torricelli**, Giacomo. Irrigazioni e laghi artificiali della Spagna; relazione. Text & plates [2 v.]. 8°. Firenze, 1888. (*Italy—Agricoltura, industria e commercio, Ministero di—Agricoltura, Direzione generale dell.* Annali di agricoltura, 1888. 141.) W^A W^G
- 1764 ——— Laghi artificiali dell' Algeria, della Francia e del Belgio; relazione. Text & plates [2 v.]. 8°. Roma, 1886. (*Italy—Agricoltura, industria e commercio, Ministero di—Agricoltura, Direzione generale dell.* Annali di agricoltura, 1886. 106.) W^A W^G

PERIODICALS DEVOTED TO IRRIGATION.

- + Following a date signifies current at the date in question.
 || Following a date signifies publication discontinued.

- 1765 **Arid America**; monthly magazine devoted to irrigation and descriptive of the great West, 1887–1897. v. 1–9. il. 4°. Denver, 1887–1897. ||
- 1766 **California advocate**, [weekly] journal . . . devoted to irrigation development, etc., 1896–1898. v. 1–3. f°. San Francisco and Escondido, 1896–1898. || W^A
 Edited by George H. Maxwell.
 Begun October, 1896, as a monthly, changed to a weekly Jan. 15, 1898.
 United with **National advocate** and continued under the title **National irrigation**.
- 1767 * **Drainage and farm journal**, [monthly], 1879–1890. v. 1–12. 8°. Indianapolis, 1879–1890.
 Edited by J. J. W. Billingsley.
 Continued under the title **Drainage journal**. q. v.
- 1768 **Drainage journal**, [monthly], 1891–1900. v. 13–22. 8°. Indianapolis, 1891–1900. + W^A W^C
 Edited by J. J. W. Billingsley.
 For earlier volumes, see **Drainage and farm journal**.
- 1769 **Irrigation age**, [monthly], 1891–1900. v. 1–15. il. pl. f° & 4° (v. 1–5 f°, v. 6–15 4°). Chicago, etc., 1891–1900. + W^A W^G W^C
 Edited by J. E. Forrest.
 Originally published fortnightly at Denver.
- 1770 * **Irrigation champion**, [monthly], 1894–1897. Garden City, Kans., 1894–1897. ||
 Edited by A. W. Stubbs.
- 1771 **Irrigation era**, [monthly], 1887–1900. v. 1–11. il. f°. Denver, 1887–1900. + W^A W^C
 Edited by L. B. Yauber.

- 1772 * **Irrigation** farmer, [monthly], 1894-1898. f°. Ottawa, Kans., 1894-1898. ||
 Edited by J. L. **Bristow**.
- 1773 * **Land and water**, [monthly], 1892-1897. f°. Los Angeles, 1892-1897. ||
 Edited by F. F. **McCamant**.
- 1774 **National** advocate, [monthly], 1897-November, 1900. v. 1-5, no. 10. il. pl. 4°. San Francisco, etc., 1897-1900.
W^A W^C
 United with **California** advocate and continued under the title **National** irrigation. q. v.
- 1775 **National** irrigation, [monthly], December, 1900. v. 5, no. 11. il. pl. 4°. Wash., 1900. +
W^A
 Edited by Guy Elliott **Mitchell**.
 For earlier numbers, see **National** advocate.
- 1776 **Southwestern** farm and orchard, a monthly journal devoted to the interest of the irrigated southwest, 1894-1900. 4°. Las Cruces, N. Mex. 1894-1900. +
 Edited by F. C. **Barker**.
- 1777 * **Texas** stock farm and irrigation, [weekly], 1895-1900. f°. Brownwood, 1895-1900. +
- 1778 **Wyoming** industrial journal; a monthly publication devoted to irrigation, live stock, agriculture, mines, [etc.], 1899-1900. v. 1-2. il. f°. Cheyenne, 1899-1900. +
W^A
 Edited by G. S. **Walker**.

SUBJECT INDEX.

	No.		No.
Africa, <i>see</i> Algeria—Cape of Good Hope—		Arizona.	
Egypt—German Southwest Africa—		Code.....	274
Orange Free State—Sahara desert—		Davis.....	351
South Africa.		Greely.....	575
Algeria.		Gulley and Collingwood.....	598
Aymard.....	37, 40	Newell.....	1068
Hanric.....	612	Stolbrand.....	1337
Joly.....	787	United States—Agriculture, Depart-	
Pochet.....	1164	ment of.....	1408
Vidalin.....	1669	United States—House of Representa-	
<i>see also</i> Artesian wells and underground		tives—Irrigation of arid lands,	
waters—Reservoirs.		Committee on.....	1464
Alkali.		Yuma county, Citizens' executive	
Buffum.....	175	committee of.....	1761
Hilgard.....	659, 661, 662, 664	<i>see also</i> Artesian wells and underground	
Hilgard and Loughridge.....	666	waters.	
Loughridge.....	880	Artesian wells and underground waters.	
O'Brine.....	1119	Auchincloss.....	36
Scougall.....	1293	Bidder.....	101
Traphagen.....	1387	Capito.....	229
Whitney and Means.....	1718, 1719	Chamberlin.....	253
Wyoming experiment station.....	1755	Cox.....	308
Alps.		Dixon.....	381
Blotnitzki.....	109	Fortier.....	474
Gras.....	566	Grunsky.....	588, 593
Irrigation in the Alps.....	727	King.....	803
Tavernier.....	1360	Kittle.....	805
Weber von Ebenhof.....	1698	La Grange.....	825
Altitudes, dictionary of.		Marzy.....	941
Gannett.....	514	Newell.....	1067
American irrigation.		Salbach.....	1266
Derry.....	375	Slichter.....	1391
Gholovnin.....	524	Spon.....	1324
Tatham.....	1359	in Algeria.	
Wallace.....	1690	Galens.....	508
<i>see also</i> United States.		Laurent.....	837
Amity canal, duty of water.		United States—Agriculture, Depart-	
Berry.....	96	ment of—Artesian and underflow	
Analyses of waters for irrigation.		investigation and irrigation in-	
Dixon.....	383	quiry.....	1414
Hilgard.....	660, 663	in Arizona.	
Lane.....	834	United States—House of Representa-	
Mingaye.....	993	tives—Territories, Committee on..	1484
Oklahoma agricultural experiment		in Australia.	
station.....	1123, 1125	Dixon.....	382
Wyoming experiment station.....	1759	Russell, H. C.....	1251
Apulian aqueduct.....	27	in California.	
Aqueducts, <i>see</i> Apulian aqueduct—Canals—		Fox.....	479
Roman aqueducts—Roquefavour aque-		Grunsky.....	593
duct.		in Colorado.	
Arid lands of United States, <i>see</i> United		Carpenter, L. G.....	230, 232
States.		Emmons, Cross, and Eldridge.....	430

	No.		No.
Artesian wells and underground waters—		Artesian wells and underground waters—	
Continued.		Continued.	
in Colorado—Continued.		in Queensland—Continued.	
Gilbert	528	Queensland— <i>Geological survey</i> ..	1197, 1198
Miller	986	Queensland— <i>Water supply depart-</i>	
United States— <i>House of Representa-</i>		<i>ment</i>	1201
<i>tives—Irrigation of arid lands,</i>		Suttor	1351
<i>Committee on</i>	1460	in Sahara desert.	
Van Diest	1620	Laurent	837
in France.		in South Dakota.	
Bazaine	68	Bailey	44
in Idaho.		Beach	75
Russell, I. C.	1253	Butler	182
in Indian territory.		Coffin	275, 276
Gregory	581	Culver	324, 325
Hill	670	Darton	339, 340
in Indiana.		Todd	1376
Leverett	850, 851	United States— <i>Senate—Agriculture</i>	
in Italy.		<i>and forestry, Committee on</i>	1585
Italy— <i>Agricoltura, industria e com-</i>		Updike	1601
<i>mercio, Ministero di—Agricoltura,</i>		in Texas.	
<i>Direzione generale dell'</i>	729	Hill, R. T.	670
in Kansas.		Hill, R. T., and Vaughan	671
Gregory	581	Roesler	1235
Haworth	631	in United States.	
Hay	632	Darley	337
Miller	986	Hay	636
United States— <i>Senate—Agriculture</i>		United States— <i>Agriculture, Depart-</i>	
<i>and forestry, Committee on</i>	1585	<i>ment of</i>	1401
in Montana.		United States— <i>Agriculture, Depart-</i>	
Pollett	459	<i>ment of—Artesian and underflow</i>	
Mortson	1017	<i>investigation and irrigation in-</i>	
in Nebraska.		<i>quiry</i>	1410
Barbour	50	United States— <i>Interior, Department</i>	
Darton	341, 343	<i>of the—Geological survey</i>	1520
Gregory	581	United States— <i>Senate—Public lands,</i>	
Hicks	655, 656	<i>Committee on</i>	1590
United States— <i>Senate—Agriculture</i>		in Washington.	
<i>and forestry, Committee on</i>	1585	Russell, I. C.	1252, 1254
in Nevada.		Smith, G. O.	1303
Irish	724	in Wyoming.	
Nichols	1098	Bailey	44
in New Mexico.		Conley	296
Carpenter, L. G.	231	Ashti tank, India.	
Hill, R. T.	670	Bombay Presidency— <i>Public works</i>	
United States— <i>House of Representa-</i>		<i>department</i>	128
<i>tives—Territories, Committee on</i> ..	1484	Burke	177
Van Diest	1620	Asia.	
in New South Wales.		Moser	1018
Abbott, T. K.	2	<i>see also</i> India.	
David	345, 346	Asphalt in irrigation works.	
Dixon	383	Purcell	1195
New South Wales— <i>Legislative as-</i>		Schuyler	1288
<i>sembly</i>	1056	Stanton	1325
New South Wales— <i>Mines and agri-</i>		Austin dam.	
<i>culture, Department of—Water</i>		Taylor	1361
<i>conservation</i>	1060	Australia.	
Wood, A. P.	1746	Culcheth	323
in North Dakota.		Hinton	674
Beach	75	Vincent, J. E.	1676
Butler	182	Wallace	1690
Culver	324	<i>see also</i> Artesian wells and underground	
Darton	340	<i>waters—New South Wales—Victoria.</i>	
Underhill	1400	Austria.	
in Queensland.		Bucchia	166
David	346		

	No.		No.
Bari Doab canal experiments.		Bouches-du-Rhone, France—Continued.	
Benton	92	Wilson	1731
Barodo waterworks, Punjab.		Bourgogne canal, <i>see</i> Panthier reservoir.	
Sadaseewjee	1262	Brisbane river, floods.	
Bear river, water rights of.		Williams	1728
Johnston and Breckons	783	Cache creek, Cal., water storage.	
Bear valley dam.		Chandler	260
Vischer and Wagoner	1678	Cache la Poudre valley, reservoir system.	
Beaucaire canal.		Nettleton	1045
Grangent	564	California.	
Bedford level.		Browne, J. R.	159
Wells	1704, 1705	California— <i>Drainage commissioners</i> ..	186
Beet, sugar, culture.		California— <i>Engineer department</i> ..	188-197
Fulmer	506	California— <i>Legislature</i> ..	198
Belgium.		California— <i>Public works department</i> ..	199
Harcourt	616	California— <i>Rivers and harbors, Ex-</i>	
Pinondel de la Bertoche	1161	<i>amining commission on</i>	200
Zoppi and Torricelli	1764	California— <i>Surveyor-general</i> ..	201
Bengal.		California agricultural experiment	
Bengal— <i>Public works department—</i>		<i>station</i>	202, 208
<i>Irrigation department</i>	87-91	California state association of irriga-	
Tremenheere	1390	<i>tion districts</i>	209, 210
Betwa canal, North West Provinces.		California state irrigation conven-	
India— <i>Public works department</i>	710	<i>tion</i>	211, 212
North West Provinces— <i>Public works</i>		California, University of— <i>College of</i>	
<i>department—Irrigation branch</i> ..	1111	<i>agriculture</i>	213
Bhim Tal dam, North West Provinces.		California water and forest associa-	
Ashhurst	33	<i>tion</i>	214, 215
Bibliography.		Chandler	260
Bernard	95	Estee	432
Colorado agricultural experiment		Fox	479
<i>station</i>	294	Greely	576
Gholovnin	524	Grunsky	589-594
New South Wales— <i>Royal commis-</i>		International irrigation congress ...	720
<i>sion on conservation of water</i>	1064	Irish	723
Perels	1148	Irrigation in California	726
Pichault	1157	Loughridge	880
Rafters	1207	Manson	936
Slichter	1301	<i>see also</i> Legislation—Water rights.	
Smith, R. B.	1311	Campine, Belgium, drainage works.	
United States— <i>Agriculture, Depart-</i>		Magis	922
<i>ment of—Experiment stations,</i>		Mangon	929
<i>Office of</i>	1428	Pinondel de la Bertoche	1161
United States— <i>Interior, Department</i>		Canada.	
<i>of the—Geological survey—Hy-</i>		Canada— <i>Interior, Department of the</i> ..	219
<i>drography, Division of</i>	1552	Jackson	765
Wegmann	1700	<i>see also</i> Water rights.	
Wilson	1732	Canals.	
Biwa-Kioto, Lake, canal, Japan.		Anderson	20
Tenabe	1363	Blotnitzki	109
Black Eagle Falls dam, Montana.		Browne, J. R.	159
Parker	1135	Buckley	173
Boggy land, <i>see</i> Marsh lands—Meadows.		Canaux d'irrigation	221
Boise valley, Idaho, duty of water in.		Debauve	358
Ross, D. W.	1238	Flynn	454
Bombay Presidency.		Fortier	471
Bombay Presidency— <i>Public works</i>		Franklin	494
<i>department</i>	122-129	Hanric	612
Booth	131	Harcourt	615, 616
Clerke	273	Jeffreys	775
Victor	1622	Leger	843
Bouches-du-Rhone, France.		Login	869
France— <i>Agriculture et du commerce,</i>		Lucas	883
<i>Ministère de l'—Agriculture, Di-</i>		Nadault de Buffon	1026
<i>rection de l'</i>	485	S	1260
Roth	1242	Seougall	1293

	No.		No.
Canals—Continued.		Current meter.	
United States— <i>State, Department of.</i>	1593	Stearns	1329
<i>see also</i> Flow of water in rivers, canals, pipes, etc.—names of canals.		<i>see also</i> Ritchie-Haskell direction cur- rent meter—Woltmann current me- ter.	
Cape Colony, water supply.		Damodar canal.	
Gamble.....	512	Bengal— <i>Public works department—</i> <i>Irrigation department</i>	89
Cape of Good Hope.		Damodar river reservoirs.	
Cape of Good Hope— <i>Lands, mines,</i> <i>and agriculture, Department of</i>	223, 224	Garnault	519
Cape of Good Hope— <i>Public works</i> <i>department</i>	225-228	Dams, construction of.	
Carpentras, Canal d'irrigation de.....	220	Anderson.....	22
Cavour canal.		Bachmann	43
Dyas.....	412	Barbet	48, 49
Italy— <i>Finanze, Ministero delle—De-</i> <i>manio e delle tasse, Direzione gen-</i> <i>erale del—Canali demaniali d'ir-</i> <i>rigazione, Amministrazione dei</i> ..	761	Chittenden	268
Oppermann	1130	Courtney	305
Cevennes mountains, France, reservoirs.		Coventry	306
Bosc	133	Croes	316
Ceylon.		Delocre	364
Byrne	183	Fortier	473
Ceylon—Irrigation department....	250-252	Francis	489
Deakin	356	Gould	547
Chécliff dam, France.		Graëff	560
Lamaïresse	826	Herschel	644
China, canal systems.		Hill, E. P	667
Browne, J. R	159	Hill, J. W	668
Cincinnati reservoir.		Kreuter	812
Hill, J. W	668	Le Rond	845
Cippoletti weir.		Lieckfeldt	854
Flynn, A. D., and Dyer.....	449	McCulloh	888
Colorado.		MacMaster	908
Chittenden	266	Merriman	973
Colorado agricultural experiment station.....	292-294	Pelletreau	1143
Gannett	516	Rafter	1204
Greely	577	Schuyler.....	1287
James	770	Scott, A. M	1290
National irrigation congress.....	1030	Stanton.....	1325
O'Meara	1128	Strange	1345
Pueblo gravity water company of Colorado.....	1185	Thiéry.....	1367
Thompson, A. H	1371	Van Buren	1619
United States— <i>House of Represent-</i> <i>atives—Public lands, Committee</i> <i>on</i>	1470-1473	Vischer and Wagoner.....	1678
United States— <i>Interior, Department</i> <i>of the—Geological survey</i>	1507	Wegmann	1699, 1700
<i>see also</i> Artesian wells and underground waters—Legislation—Water rights.		movable.	
Connecticut.		Buckley	172
Phelps.....	1155	Thomas	1368
Copais, Lake, drainage of.		Tranié.....	1385
Richou	1227	Wegmann	1700
Croton river.		<i>see also</i> Flow of water in rivers, canals, pipes, etc.—names of dams—Sluices —Weirs.	
Croes	315	Danube river.	
Croton river dam.		Hartley.....	623-626
Gowen.....	553	Kühl	814
Croton waterworks.		Darling river, N. S. W.	
Church	269	New South Wales— <i>Royal commis-</i> <i>sion on conservation of water</i>	1064
Crystal Springs dam, Colo.		Poole	1172
Brown, E.....	154	Russell, H. C	1249
		Deccan, India.	
		Playfair	1162
		Discharge of water over weirs, from orifice, etc., <i>see</i> Flow of water in rivers, canals, pipes, etc.	
		Distributaries, <i>see</i> Canals—Pipes.	
		Drainage.	
		Abel and Vincent.....	4
		Amenduni.....	10

Drainage—Continued.	No.	Durance river, France.	No.
Anderegg	18	Hardy	619
Anderson, J	19	Duty of water.	
Andreossy	25	Beresford	93
Aymard	39, 40	Buffum	174
Barral	58	Carpenter, L. G	237
Bidder	101	United States— <i>Agriculture, Department of—Experiment stations, Office of</i>	1416
Brisse and Rotrou	151	in Boise valley, Idaho.	
Bryas	164	Ross, D. W.	1238
California— <i>Drainage commissioners</i>	186	in Gallatin valley.	
Chambrelent	254, 256, 257	Fortier	472
Cole, A. N.	279	in Nebraska.	
Cole, A. P.	280	Stout	1341
Crépin	313	in Wyoming.	
Debauve	359	Johnston	782
Dempsey	366	on Big Cottonwood creek, Utah.	
Denton	371, 374	Gemmell	521
Ditching and draining	380	on the Nile river.	
Donald	385	Willcocks	1725
Dornès	390	under Amity canal, Colo.	
Duponchel	402	Berry	96
Elliott	427	under Gage canal, Cal.	
Fontaine	465	Irving	728
French	499	under Logan and Richmond canal, Utah.	
Green	578	Swendsen	1354
Holm	681	Earthwork tables.	
Hutchinson	697	Broadbent and Campin	152
Johnstone	785, 786	Dwyer	411
Jones	788	Porter and Duncan	1175
King	801	Earthworks.	
Klippart	806	Flynn, P. J.	456
Korzybski	808, 809	Fortier	473
Kreuter	813	Howe	691
Leclerc	841	Le Mesurier	844
Livesay	861	Newman	1097
Löbe	868	Specht	1323
Mangon	928, 931	Eden canal.	
Meaux (France), Société d'agriculture, sciences et arts, de	963	Bengal— <i>Public works department—Irrigation department</i>	88
Mechi	964	Egypt.	
Meyn	981	Barois	54
Midy	984	Belgrand	80
Miles	985	Buckley	169
Montluisant	1012	Davidson	347
Munn	1021	Egypt— <i>Public works ministry</i>	413-423
Némec	1041	Eyth	454
Oregon agricultural experiment station	1131	Greig and Eyth	586
Parkes	1136	Jackson	765
Passy	1139	Malézieux	925
Perels	1149	Moncrieff	996, 997
Polonceau	1167	Nubar	1118
Roland	1236	Victoria— <i>Royal commission on water supply</i>	1625
Saint-Venant	1264	Wallace	1690
Scott	1291	Willcocks	1725, 1726
Smith, James	1308	Elevation tables.	
Stephens	1330	Davis	350
Stevenson	1333	Engineering.	
Turner	1397	Mahan	923
Waring, G. E.	1692	Medley	966, 967
Waring, H. R.	1693	Nicolls	1099
Wasell	1694	Patton	1141
Wheeler, W. H.	1715	Plympton	1163
Wiggin	1723	Rankine	1215
Wise	1743		
Ysabeau	1760		
Drainage journal	1768		
Dunning's dam, near Scranton, Pa.			
Gould	548		

	No.		No.
Engineering—Continued.		Flow of water in rivers, canals, pipes, etc.—	
Trautwine.....	1388	Continued.	
Wilson, H. M.....	1732, 1733, 1736	Ganguillet and Kutter.....	513
<i>see also</i> Hydraulics—Waterworks.		Graëff.....	557-559
England.		Graeve.....	562
Jackson.....	765	Gребенau.....	573
Symons.....	1356	Harder.....	613
Tatham.....	1359	Henry.....	639
<i>see also</i> Bedford level—Legislation—		Hering.....	640
Witham river.		Herschel.....	647
English dam, Sierra county, Cal.		Johnston.....	781
Bowie.....	141	Kindermann.....	800
Erie canal.		Knibbs.....	807
Landreth.....	833	Kuichling.....	816
Rafter.....	1206	Kutter.....	818-820
Esla canal, Spain.		Lafont.....	824
Higgin.....	657	Lamb.....	830
Evaporation.		Lesbros.....	846
Binnie.....	104	Leslie.....	847
Carpenter, L. G.....	234	Longridge.....	878
Fitz Gerald.....	444	McAlpine.....	885
Greaves.....	571	Manning, R.....	933
Russell, H. C.....	1250	Marx, Wing, and Hoskins.....	940
Schuyler.....	1287	Minard.....	992
Farm irrigation.		Poncelet and Lesbros.....	1169
Mills, A. A.....	987	Prince, G. T.....	1180
Wickson.....	1720	Provis.....	1184
Wilcox.....	1724	Rafter.....	1205
Fayûm, Egypt.		Rhind.....	1223
Brown, R. H.....	157	Ryon.....	1258
Filtration, <i>see</i> Seepage.		Sadler.....	1263
Floods.		Smith, H.....	1304, 1305
Craig.....	309	Smith, I. W.....	1306
Crowell.....	318	Smith, J. W.....	1307
Howden.....	690	Stearns.....	1328, 1329
Hutton.....	699	Stone.....	1339
Russell, H. C.....	1248, 1249	Swan.....	1352
Seddon.....	1297	Swan and Horton.....	1353
Symons.....	1356	Vauthier.....	1621
Williams.....	1728	Victoria—Water-supply department..	1664
<i>see also</i> Torrents.		Weston.....	1710
Flow of water in rivers, canals, pipes, etc.		Wood, D. V.....	1747
Barracrough and Strickland.....	56	Flumes, <i>see</i> Canals—Pipes.	
Bazin.....	69-72	Forests and irrigation.	
Benton.....	92	Fernow.....	439
Blackwell.....	106	Pinchot.....	1159, 1160
Boileau.....	114-119	France.	
Boussinesq.....	139	Andreossy.....	25
Bowie.....	142	Bazaine.....	68
Browne, R. E.....	160	Belgrand.....	79
Bruce.....	161	Bosc.....	133
Buckley.....	169	Bryas.....	165
Castel.....	243, 244	California—Engineer department....	187
Chesbrough and Durant.....	264	Chambrelent.....	254-257
Cunningham.....	326-328	Charpentier de Cossigny.....	262
Darcy.....	335	Conte.....	298
Darcy and Bazin.....	336	Crepin.....	313
Donkin.....	387	Dumont, G.....	400
Dupuit.....	403, 404	Foltz.....	463
Ellis.....	428, 429	France—Agriculture et du commerce,	
Fitz Gerald.....	445	<i>Ministère de l'.....</i>	482
Flamant.....	448	France—Agriculture et du commerce,	
Flynn, P. J.....	450-454	<i>Ministère de l'—Agriculture, Di-</i>	
Fournié.....	478	<i>rection de l'.....</i>	484, 485
Francis.....	488, 490, 491	France—Agriculture, Ministère de l'—	
Fteley and Stearns.....	505	<i>Agriculture, Direction de l'.....</i>	486

France—Continue 1.	No.	Gauging of streams and rivers.	No.
France— <i>Agriculture, Ministère de l'—</i>		Abbot.....	1
<i>Hydraulique agricole, Direction</i>		Boileau.....	115
<i>de l'.....</i>	487	Ganguillet and Kutter.....	513
Graëff.....	556	Grebenau.....	572
Grangent.....	564	Herschel.....	644
Guérard.....	596	McKinney.....	900
Harcourt.....	616	Parkin.....	1137
Improvement and irrigation of the		Tudsbury.....	1395
plain of Forez.....	703	United States— <i>Agriculture, Depart-</i>	
Lamairese.....	828	<i>ment of—Weather bureau.....</i>	1450
Leger.....	843	United States— <i>Interior, Department</i>	
Mangon.....	929	<i>of the—Geological survey.....</i>	1538
Moncrieff.....	998	United States— <i>Interior, Department</i>	
Nadault de Buffon.....	1026	<i>of the—Geological survey—Hy-</i>	
Puvris.....	1196	<i>drography, Division of.....</i>	1553,
Straten Ponthoz.....	1346		1554, 1558-1560
Tatham.....	1359	Victoria— <i>Water-supply department.</i>	1663
Tavernier.....	1360	<i>see also</i> Current meter—Flow of water	
Tranié.....	1385, 1386	in rivers, canals, pipes, etc.—Meas-	
United States— <i>Commission on the</i>		urement of water—Water meter.	
<i>irrigation of the San Joaquin, Tu-</i>		Geelong water supply, Victoria.	
<i>lare, and Sacramento valleys, Cal-</i>		Dobson.....	384
<i>ifornia.....</i>	1451	Genesee river storage surveys.	
Valles.....	1618	Rafters.....	1203
Vidalin.....	1669	Gennevilliers, France.	
Vigan.....	1671	Bazaine.....	68
Wilson.....	1731	German Southwest Africa.	
Zoppi and Torricelli.....	1764	Rehbock.....	1219
<i>see also</i> Legislation—Reservoirs—Water		Germany.	
rights.		Harcourt.....	616
Fruit culture.		Mauny de Mornay.....	943
Joly.....	787	<i>see also</i> Legislation.	
Kansas agricultural experiment sta-		Gila river, Ariz., storage of water on.	
tion.....	794	Lippincott.....	858
Wickson.....	1721, 1722	Schuyler.....	1279
Fucino, Lake, Italy.		Gila river reservation.	
Brisse and Rotrou.....	151	Davis.....	353
Furens reservoir.		Gileppe dam at Verviers, France.	
Graëff.....	558, 560	Bodson, Detienne, and Leclercq....	111
Montgolfier.....	1011	Kuhn.....	815
Gage canal, Cal., duty of water.		Glasgow waterworks.	
Irving.....	728	Bruce.....	161
Gallatin valley, duty of water.		Gódávari district, Madras Presidency.	
Fortier.....	472	Cotton.....	301
Ganges canal.		Walch.....	1686
Cautley.....	247, 248	Great Kanawha river.	
Cotton and Cautley.....	302	Scott, A. M.....	1290
Cunningham.....	326-328	Greece.	
Dhunowree works.....	377	Belgrand.....	80
Good.....	540	<i>see also</i> Copais, Lake.	
Grand canal du Gange.....	563	Greeley colony, Colo.	
India— <i>Public works department.....</i>	706	Boyd.....	145, 146
North West Provinces— <i>Public works</i>		Greenhouse irrigation.	
<i>department.....</i>	1105	Green, W. J., and Green, E. C.....	579
North West Provinces— <i>Public works</i>		Rane.....	1214
<i>department—Irrigation branch ..</i>	1110	Taft.....	1357
North West Provinces and Oudh—		United States— <i>Agriculture, Depart-</i>	
<i>Public works department—Irrri-</i>		<i>ment of—Experiment stations,</i>	
<i>gation branch.....</i>	1114, 1116	<i>Office of.....</i>	1436
Tickell.....	1375	Grisanti reservoir.	
Garden irrigation.		Torricelli.....	1378
Halsted and Kelsey.....	610	Guadalavia river, Spain.	
Taft.....	1357	Borrull.....	132
Wickson.....	1720	Habra dam, Algeria.	
Gascony, France.		Crugnola.....	319
Chambreleut.....	254, 256, 257	Grad.....	555

Habra plain, Algeria.	No.	Hydraulics—Continued.	No.
Pochet.....	1164	Laffineur.....	822
Hamiz reservoir, Algeria.		Lévy-Salvador.....	853
Hanric.....	612	Lombardini.....	873, 874
Harvey water motor.		Marzy.....	941
Johnson.....	779	Masoni.....	942
Haskell current meter.		Meissner.....	968
Haskell.....	627	Mengotti.....	969
Hawaii.		Merriman.....	974
Maxwell.....	944	Neville.....	1049
Schuyler and Allardt.....	1289	Revy.....	1222
Hayti.		Salazar.....	1265
Crowell.....	318	Seddon.....	1298
Henares canal, Spain.		Stevenson.....	1334
Higgin.....	657	Sullivan.....	1349, 1350
Holyoke dam.		Tudsbury and Brightmore.....	1396
Herschel.....	646	Weisbach.....	1701, 1702
Hudson reservoir and canal company.		Wex.....	1711
United States— <i>House of Representatives—Indian affairs, Committee on</i>	1455	<i>see also</i> Flow of water in rivers, canals, pipes, etc.—Gauging of streams and rivers—Hydraulic machinery—Hydraulic motors—Measurement of water—Pumps and pumping.	
Hudson river storage surveys.		Hydrography of arid regions of the United States.	
Rafter.....	1208, 1209	United States— <i>Interior, Department of the—Geological Survey</i>	1516, 1538
Hydraulic machinery.		United States— <i>Interior, Department of the—Geological survey—Ihydrography, Division of</i> ..	1552, 1556, 1557
Blaine.....	107	United States— <i>Interior, Department of the—Geological survey—Irrigation survey</i>	1565–1568
Ewbank.....	433	of Potomac basin.	
Robinson.....	1233	Babb.....	41
Hydraulic motors.		Hydrology.	
Björling.....	105	Beardmore.....	76
Bodmer.....	110	Debaue.....	361
Bovey.....	140	Gholovnin.....	523
Chauveau des Roches, Belin, and others.....	263	Russia— <i>Public works ministry</i>	1257
Francis.....	490	<i>see also</i> Rainfall.	
Meissner.....	968	Idaho.	
Weisbach.....	1701	Foote.....	468
<i>see also</i> Harvey water motor.		Idaho— <i>Engineer department</i>	700
Hydraulic station at Santhià, Italy.		Idaho state irrigation committee....	702
Saccheri.....	1261	Newell.....	1069
Hydraulic surveying.		Nimmo.....	1101
Haskoll.....	628	Ross, D. W.....	1238
Hydraulic tables.		<i>see also</i> Artesian wells and underground waters—Legislation.	
Beardmore.....	76	Illinois, water resources.	
Box.....	144	Leverett.....	849
Davis.....	350	India.	
Flynn.....	452, 453	Barois.....	53
Higham.....	658	Buckley.....	169–172
Hydraulics.		Craig.....	309
Aubuisson de Voisins.....	35	Culchette.....	321
Becker.....	78	Dacosta.....	333
Béliador.....	84	Davidson.....	347
Bernard.....	95	Deakin.....	356
Bossut.....	134	Franklin.....	494
Bovey.....	140	Gibbs.....	526
Bowser.....	143	Gordon, G.....	542
Charpentier de Cossigny.....	261	Greathed.....	570
Church.....	270	Howden.....	690
Craig.....	311	India— <i>Commission of inquiry on Indian famine</i>	704
Debaue.....	361		
Downing.....	392		
Durand-Claye.....	406		
Dwyer.....	411		
Franzius.....	495		
Gould.....	549, 551		
Graëff.....	561		
Hagen.....	602		
Jackson.....	764, 765		

- | | | | |
|--|---------------|---|------------|
| India—Continued. | No. | Irrigation—Continued. | No. |
| India— <i>Public works department</i> ... | 705-716 | Passy | 1139 |
| Jackson | 764, 765 | Perels | 1148 |
| Lamaresse | 827 | Polonceau | 1167 |
| Levinge | 852 | Poston | 1177 |
| Login | 869 | Roland | 1236 |
| Longridge | 877 | Ronna | 1237 |
| McKinney | 894 | Schubert | 1278 |
| Medley | 966 | Scott | 1292 |
| Nicolls | 1099 | Scougall | 1294 |
| Playfair | 1162 | Stephens, G. | 1330 |
| Sankey | 1276 | Toussaint | 1383 |
| Smith, R. B. | 1310 | Treuding | 1391 |
| Stotherd | 1340 | United States— <i>Agriculture, Depart-</i> | |
| United States— <i>Commission on the</i> | | ment of— <i>Experiment stations,</i> | |
| irrigation of the San Joaquin, | | Office of | 1425, 1431 |
| Tulare, and Sacramento valleys, | | United States— <i>State Department.</i> | 1593, 1595 |
| California | 1451 | Vignerote | 1672 |
| Voelcker | 1680 | Villeroy and Muller | 1674, 1675 |
| Walker | 1689, 1690 | Vitard | 1679 |
| Wilson, Allan | 1729 | Walker | 1688 |
| Wilson, H. M. | 1734 | West | 1706 |
| see also Bengal—Bombay Presidency— | | Ysabeau | 1760 |
| North West Provinces—Punjab— | | | |
| Reservoirs. | | Italy. | |
| Indian reservations. | | Baumgarten | 67 |
| Newell | 1081 | Brisse and Rotrou | 151 |
| see also Gila river reservation—Pima | | California— <i>Engineer department.</i> ... | 187 |
| Indian reservation—Sacaton Indian | | Comoy | 295 |
| reservation—Umatilla reservation— | | Davidson | 347 |
| Ute, Southern, Indian reservation. | | Italy— <i>Agricoltura, industria e com-</i> | |
| Indian river dam. | | mercio, Ministero di— <i>Agricoltura,</i> | |
| Rafter, Greenalch, and Horton | 1211 | <i>Direzione generale dell'</i> | 729-739, |
| Indian territory, see Artesian wells and un- | | 741, 743-753 | |
| derground waters. | | Italy— <i>Commissione idraulica.</i> | 754-760 |
| Indiana, wells. | | Italy— <i>Finanze, Ministero delle—De-</i> | |
| Leverett | 850, 851 | manio e delle tasse, <i>Direzione ge-</i> | |
| Ireland. | | nerale del— <i>Canali demaniali d'ir-</i> | |
| Michaelis | 982 | rigazione, <i>Amministrazione dei.</i> | 761, 762 |
| Irrawaddy river. | | Italy— <i>Lavori pubblici, Ministero dei—</i> | |
| Gordon, R. | 543, 544, 545 | <i>Opere idrauliche, Direzione ge-</i> | |
| Stoddard | 1336 | nerale delle | 763 |
| Irrigation. | | Lombardini | 871 |
| Charpentier de Cossigny | 261, 262 | Manara | 926 |
| Debauve | 359, 360 | Mauny de Mornay | 943 |
| Deby | 362 | Monerieff | 993 |
| Donald | 385 | Nadault de Buffon | 1026 |
| Dorsey | 391 | Roth | 1242 |
| Fürstenhaupt | 507 | Saccheri | 1261 |
| Gibbs | 526 | Tavernier | 1360 |
| Graves | 568 | Torricelli | 1378 |
| Johnston and Stannard | 784 | United States— <i>Commission on the</i> | |
| Keelhoff | 796 | irrigation of the San Joaquin, | |
| Kenney | 798 | Tulare, and Sacramento valleys, | |
| King | 802 | California | 1451 |
| Llaurado | 867 | Victoria— <i>Royal commission on water</i> | |
| McDowell | 889 | supply | 1625 |
| Mangon | 930 | see also Legislation—Lombardy—Pied- | |
| Marsh | 938 | mont. | |
| Mead | 950 | Japan, see Biwa-Kioto, Lake, canal. | |
| Merl | 971 | Java, see Probolinggo. | |
| Midy | 984 | Jeypore, India, water supply. | |
| Montuisant | 1012 | Jacob | 769 |
| Mullins | 1020 | Jumna canal. | |
| Nadault de Buffon | 1025-1027 | Punjab— <i>Public works department—</i> | |
| O'Meara | 1128 | irrigation branch | 1193, 1194 |
| Pareto | 1133 | Jura, department, France. | |
| | | Lamaresse | 828 |

	No.	Legislation—Continued.	No.
Kalamazoo river.		in Nebraska.	
Horton	688	Nebraska—Irrigation, State board of.	1034
Kali Nadi aqueduct, <i>see</i> Ganges canal.		Nebraska—Legislature	1035
Kansas.		Wilson, J. M.	1741
Kansas—Forestry and irrigation....	792	in Spain.	
Kansas—Irrigation survey and exper- iment, Board of	793	Jaubert de Passa	773
Kansas irrigation association	795	in Switzerland.	
Tweeddale	1398	Tavernier	1360
<i>see also</i> Artesian wells and underground waters—Water rights.		in United States.	
Karachi waterworks, Sind.		Campbell	218
Strachan	1343	Critchett	314
Kern county, Cal.		Hinton	675
Haggin	604	Kinney	804
Kern river, Cal.		Long	876
Olmsted	1127	Mead	945
Kistna river, Madras.		Pomeroy	1168
Buckle	167	<i>see also</i> Water rights.	
Walch	1687	Liverpool, Eng., waterworks.	
La Plata river, hydraulics.		Deacon	355
Revy	1222	Logan and Richmond canal, Utah.	
Languedoc, Canal de, <i>see</i> Midi, Canal du.		Swendsen	1354
Legislation.		Lombardy, Italy.	
Barral	63	Baumgarten	66
Gallo	509	Bruschetti	162, 163
Haag	600	Dumont and Dumont	398
Laffineur	822	Ferrari	440
Nadault de Buffon	1024, 1026	Italy—Agricultura, industria e com- mercio, Ministero di—Agricultura, Direzione generale dell'	749
Ramón de Ibarrola	1213	Lombardini	875
in Australia.		Salles	1269
Hinton	674	Smith, R. B.	1311
in California.		Vignotti	1673
California—Attorney-General	185	Los Angeles river, Cal., water rights.	
Works	1748	Boggs	113
in Colorado.		Madras Presidency.	
Carpenter, S. W.	240	Anderson	20
Colorado—Commission to revise laws of the state	281	Best	100
Colorado—Engineer department	283	Buckle	167
Ditch owners' association	379	Cotton	301
Field	442	Horsley	687
Huston	696	Jones, J. A.	789
in England.		Latham	836
Dumas	396	Lawford	839, 840
in France.		Madras Presidency—Public works department	909-916
Croos	317	Madras Presidency—Public works department—Irrigation branch.	917-921
Daviel	348, 349	Maine, water-power streams.	
Debauve	360	Porter	1174
Doyat	333	Majorca island.	
Dubreuil	395	Waring	1693
Tavernier	1360	Marne-Rhine canal.	
in Germany.		Graëff	559
Hahn	605	Picard	1156
Heyer	653	Marseilles canal aqueduct.	
Künzel	817	Rennie	1220
Lette	848	Marsh lands.	
Mauny de Mornay	943	Browne, J. R.	159
Pózl	1178	Crepin	313
in Idaho.		Dassel	344
Idaho—Legislature	701	Dornès	390
in Italy.		Manson	936
Dumont and Dumont	398	Smith, W.	1312
Lombardini	875	Wheeler	1715, 1716
Mauny de Mornay	943	<i>see also</i> Meadows.	
Tavernier	1360		

Masonry construction.	No.	Montana—Continued.	No.
Baker.....	46	Newell.....	1070
Beresford.....	94	Nimmo.....	1101
Boix.....	121	Wilson, H. M.....	1735
Patton.....	1140	<i>see also</i> Artesian wells and underground waters.	
<i>see also</i> Dams—Reservoirs—Walls.		Montezuma valley.	
Meadows		United States—Interior, Department of the.....	1486
Anderegg.....	18	Moselle river, France.	
Boswell.....	135	Foltz.....	463
Düinkelberg.....	401	Muchkundi dam, India.....	1019
Fries.....	500	Murcia, Spain.	
Meyn.....	981	Botella.....	136
Puvis.....	1196	Mancha de Rafael.....	927
Scott, J.....	1292	Mysore, India.	
Smith, J.....	1309	Sankey.....	1276
Tatham.....	1359	Nágpúr, India, waterworks.	
Vincent, L.....	1677	Binnie.....	104
<i>see also</i> Marsh lands.		Penny.....	1144, 1145
Measurement of water.		Nebraska.	
Carpenter, L. G.....	236	Nebraska—Irrigation, State board of.....	1033
Castelli.....	245	Nebraska agricultural experiment station.....	1036, 1037
Cipolletti.....	271, 272	Nebraska commission to National irrigation congress.....	1038
Dwelshauvers-Dery.....	410	Nebraska irrigation annual.....	1039
Fellows.....	438	Nebraska state irrigation convention.....	1040
Herschel.....	645, 647	<i>see also</i> Artesian wells and underground waters—Duty of water—Legislation—Water rights.	
Pope.....	1173	Nevada.	
Ryon.....	1259	Greely.....	576
<i>see also</i> Gauging of streams and rivers—Flow of water in river, canals, pipes, etc.—Water meter.		Nevada state irrigation convention.....	1048
Mesilla valley, N. Mex.		Newell.....	1071
Barker.....	52	Newlands.....	1093
Metidja, Algeria.		Newlands, Hinton, Greene, and Fulton.....	1096
Aymard.....	37	<i>see also</i> Artesian wells and underground waters.	
Mexico.		New Jersey.	
Body.....	112	Voorhees.....	1681
Garay.....	517, 518	New Mexico.	
Mexico—Fomento, colonización, industria y comercio, Secretaría de.....	976-979	Newell.....	1072
Mexico—Public works department.....	980	United States—Agriculture, Department of.....	1408
Mora.....	1014	United States—House of Representatives—Agriculture, Committee on.....	1452
Ponmarede.....	1170	<i>see also</i> Artesian wells and underground waters.	
United States—Agriculture, Department of.....	1405	New South Wales.	
Water storage in Mexico.....	1697	Abbott, T. K.....	2
Michigan, water resources.		Abbott, W. E.....	3
Lane.....	834, 835	David.....	345, 346
Midi, Canal du, France.		Dixon.....	383
Andreossy.....	25	Gipps.....	532
Milan canal, Italy.		Home, F. J.....	685
Bignami.....	102	McKinney.....	892, 893, 895, 896, 898-905
Miles City, Mont., artesian basin.		Mingaye.....	993
Follett.....	459	New South Wales—Legislative assembly.....	1055-1059
Mississippi river.		New South Wales—Mines and agriculture, Department of—Water conservation.....	1060, 1061
Humphreys and Abbot.....	695	New South Wales—Royal commission on conservation of water.....	1062-1064
Seddon.....	1297	Wood.....	1746
Starling.....	1326		
Missouri river water rights.			
Mead.....	960		
Mœris, Lake.			
Brown, R. H.....	157		
Montana.			
Montana—State arid land grant commission.....	1007		
Montana state irrigation convention.....	1010		

New York.	No.	Paroy reservoir, France.	No.
New York— <i>State engineer and surveyor</i>	1065	Pichard	1156
Rafters	1210	Pecos Valley, N. Mex.	
New Zealand, water supply.		Reed	1218
Ritso	1230	Percolation, <i>see</i> Seepage.	
Nile river.		Periyár project.	
Anderson	23	Allen	9
Baker, B.	45	Gaudard	520
Egypt— <i>Public works ministry</i>	415, 423	India— <i>Public works department</i>	711
Kindermann	800	MacKenzie	891
Lombardini	872	Pennycuik	1146
Malézieux	925	Peru.	
Willcocks	1725, 1727	Peru— <i>Fomento, Ministerio de</i>	1151
Nile river reservoirs.		Sears	1295
Baudot	64	Piedmont, Italy.	
Boulé	137	Paladini	1132
Brown, R. H.	158	Salles	1269
Malézieux	925	Smith, R. B.	1311
Willcocks	1725	Vignotti	1673
Nira canal, Bombay.		Pierrelatte canal d'irrigation.	
Bombay Presidency— <i>Public works department</i>	124, 127	Société du canal de Pierrelatte.....	1317
Nira canal, Bombay	1103	Pima Indian reservation.	
North Dakota.		United States— <i>Interior, Department of the—Geological Survey</i>	1519
North Dakota— <i>Irrigation and forestry, Department of</i>	1104	Pima Indians.	
<i>see also</i> Artesian wells and underground waters.		Davis	353
North West Provinces.		United States— <i>Interior, Department of the—Indian bureau</i>	1569
Ashhurst	33	Pipes, curves in.	
India— <i>Public works department</i>	710	Henny	637
North West Provinces— <i>Public works department</i>	1105	manufacture.	
North West Provinces— <i>Public works department—Irrigation branch</i> ..	1107-1112	Jeffreys	774
North West Provinces and Oudh— <i>Public works department—Irrigation branch</i>	1113-1117	wooden stave.	
Ogden, Utah, dam.		Adams	6
Goldmark	539	Henny	638
Oklahoma.		Marx, Wing, and Hoskins.....	940
Oklahoma agricultural experiment station	1123-1125	<i>see also</i> Flow of water in rivers, canals, pipes, etc.	
Orange Free State, South Africa, public works.		Piping water.	
Hallé	609	Dupuit	404
Orchard irrigation.		Fortier	471
McClatchie	886	Goldmark	539
Richman	1226	Platte river, water rights.	
Oredon reservoir, France.		United States— <i>Interior, Department of the—Land Office, General</i>	1584
Carrie	241	Po river, Italy.	
Michelier	983	Barilari	51
Oregon.		Baumgarten	66
Newell	1073	Comoy	295
Nimmo	1101	Herisson	641, 642
Oregon agricultural experiment station	1131	Lombardini	870
Orissa canals.		Porto Rico, water resources of.	
Bengal— <i>Public works department—Irrigation department</i>	90	Wilson, H. M.	1738
Panthier reservoir, France.		Portugal, rice fields of.	
Bazin	73	Andrade Corvo	24
Paraná river, hydraulics.		Potomac river, hydrography.	
Revy	1222	Babb	41
		Potomac river dam.	
		Chittenden	268
		Probolingo, Java.	
		Lamminga	831
		Prussia, legislation.	
		Lette	848
		Puerto Rico, <i>see</i> Porto Rico.	
		Pumps and pumping.	
		Barr	55
		Berthot	97

Pumps and pumping—Continued.	No.	Reservoirs—Continued.	No.
Bovey	140	in Achterfeld, South Africa.	
Hawksley	630	Gamble	511
Hood	686	in Algeria.	
Hubbell	693	Hanric	612
Richards	1224, 1225	Torricelli	1378
Weisbach and Herrmann	1703	Zoppi and Torricelli	1764
Wilson, H. M.	1737	in France.	
<i>see also</i> Hydraulic motors.		Bazin	73
Punjab.		Boix	121
MacLean	906	Bosc	133
Medley	965	Carrie	241
Punjab—Public works department—		Graëff	558-560
<i>Irrigation branch</i>	1186-1194	Michelier	983
Pyrénées-Orientales, department, France.		Montgolfier	1011
Vigan	1671	Picard	1156
Quaker bridge dam.		Rozat de Mandres	1245, 1246
New York aqueduct commission ..	1066	Torricelli	1378
Wegmann	1699	Zoppi and Torricelli	1764
Queensland.		in India.	
David	346	Bombay Presidency—Public works	
Joyce, F. T.	790	<i>department</i>	128
Queensland—Geological survey ..	1197, 1198	Burke	177
Queensland—Public lands and agri-		Garnault	519
<i>culture, Department of</i>	1199, 1200	Strange	1345
Queensland—Water supply depart-		in Spain.	
<i>ment</i>	1201, 1202	Boix	121
Suttor	1351	Llaurado	865, 866
Rainfall.		Torricelli	1378
Auchincloss	36	Zoppi and Torricelli	1763
Babb	42	in United States, arid regions.	
Belgrand and Lemoine	83	Chittenden	266
Binnie	104	Mead	958
Coghlan	278	Newell	1091
Fitz Gerald	446, 447	Newlands	1095
Fteley	504	United States—House of representa-	
Raising water.		<i>tives—Irrigation of arid lands,</i>	
Ceredi	249	<i>Committee on</i>	1464
Ewbank	433	United States—House of representa-	
Genieys	522	<i>tives—Public lands, Committee</i>	
Prony	1183	<i>on</i>	1477, 1480, 1481, 1483
Scott, J.	1292	United States—Interior, Department	
Wahl	1684	<i>of the—Geological survey</i>	1505,
<i>see also</i> Pumps and pumping.		1528, 1531-1534	
Red river.		United States—Interior, Department	
Louisiana—State engineers, Board of.	881	<i>of the—Land office, General</i>	1571,
Red river valley, artesian basin.		1572, 1576-1580, 1583	
Follett	458	United States—Senate—Public lands,	
Upham	1602	<i>Committee on</i>	1589, 1592
Reservoir system of the Great Lakes.		of the Nile river.	
Chittenden	267	Baudot	64
Reservoirs.		Boulé	137
Arnaud	31	Brown, R. H.	158
Beloe	86	Malézieux	925
Bertrand	98	Willcocks	1725
Boix	121	<i>see also</i> Dams—Waterworks.	
Crugnola	320	Rhone valley canals.	
Dutoit	407	Leger	843
Jacob	767, 768	Vidalin	1670
Krantz	810	Rice fields of Portugal.	
Kreuter	812	Andrade Corvo	24
Polonceau	1167	Rio Grande.	
Rippl	1229	Goss	546
Schuyler	1286-1288	International water boundary com-	
Seddon	1296, 1297	<i>mission</i>	721
Torricelli	1379, 1380	Mills, Anson	988
		Mills, Anson and Follett	990

Rio Grande—Continued.	No.	Seepage—Continued.	No.
United States— <i>House of representa-</i>		Greaves.....	571
<i>tives—Foreign affairs, Com. on...</i>	1454	<i>see also</i> Artesian wells and underground	
United States— <i>Interior, Dept. of the</i>	1487	waters.	
United States— <i>Senate—Foreign rela-</i>		Seine river, France.	
<i>tions, Committee on.....</i>	1586	Belgrand.....	81, 82
United States— <i>State, Department of</i>	1594	Harcourt.....	614
Rio Hondo dam, N. Mex.		Sewage irrigation.	
New Mexico reservoir and irrigation		Rafters.....	1207
company.....	1054	Sidhnai canal, Punjab.	
Ritchie-Haskell direction current meter.		India— <i>Public works department</i>	713
Haskell.....	627	MacLean.....	907
Rivers.		Punjab— <i>Public works department—</i>	
Beardmore.....	76	<i>Irrigation branch.....</i>	1188, 1191, 1192
Bernard.....	95	Silt in canals and dams.	
Debauxe.....	358	Buckley.....	173
Frisi.....	501	Calmels.....	216, 217
Harcourt.....	615, 617	Kennedy.....	797
Merrill.....	972	Schuyler.....	1287
O'Connell.....	1120	Sind.	
Partiot.....	1138	Bombay Presidency— <i>Public works</i>	
Wex.....	1712	<i>department.....</i>	123
in France.		Fahey.....	435
Belgrand.....	79	Strachan.....	1343
in Italy.		Strachey.....	1344
Baumgarten.....	66	Sirhind canal.	
Comoy.....	295	Punjab— <i>Public works department—</i>	
in United States.		<i>Irrigation branch.....</i>	1186, 1187, 1190
Gannett.....	515	Sluices.	
<i>see also</i> Floods—Flow of water in rivers,		Best.....	99
canals, pipes, etc.—Gauging of		Cadart.....	184
streams and rivers—names of		Macalister.....	884
rivers—Torrents.		Torricelli.....	1380
Roman aqueducts.		Walker.....	1689
Belgrand.....	82	<i>see also</i> Dams—Weirs.	
Frontinus.....	503	Soane canal, India.	
Roquefavour aqueduct, Marseilles canal.		Levinge.....	852
Rennie.....	1220	Sodom dam.	
Russia.		McCulloh.....	888
Jilinsky.....	777, 778	Soil moisture.	
Russia— <i>Irrigation board.....</i>	1256	Hilgard and Loughridge.....	665
Russia— <i>Public works ministry</i>	1257	Manning, J.....	932
Sacaton Indian reservation.		Soonkésala canal, Madras.	
United States— <i>House of Representa-</i>		Latham.....	836
<i>tives—Irrigation of arid lands,</i>		South Africa, hydrology.	
<i>Committee on.....</i>	1464	Brown, J. C.....	155, 156
Sahara desert.		Tripp.....	1393
Laurent.....	837	storage reservoir.	
St. Lawrence basin.		Gamble.....	511
Chittenden.....	267	South Dakota.	
Salinas valley.		Butler.....	182
Marx.....	939	Darton.....	339
San Bernardino valley.		South Dakota— <i>Irrigation, State en-</i>	
Lippincott.....	859	<i>gineer of.....</i>	1319
San Joaquin canal, Cal.		South Dakota experiment sta-	
Specht.....	1322	tion.....	1320, 1321
San Roque water-dam.		<i>see also</i> Artesian wells and underground	
Argentine Republic— <i>Public works</i>		waters.	
<i>ministry.....</i>	28	South Fork dam, failure of.	
Sandhurst water supply, Victoria.		American society of civil engineers.	12
Brady.....	149	Spain.	
Santa Ana canal, Cal.		Aymard.....	38, 39
Hall.....	608	Botella.....	136
Seepage.		California— <i>Engineer department</i>	187
Carpenter, L. G.....	234, 235, 239	Higgin.....	657
Denton.....	372	Jaubert de Passa.....	773
Fortier.....	474, 475, 477	Llaurado.....	863, 865, 866

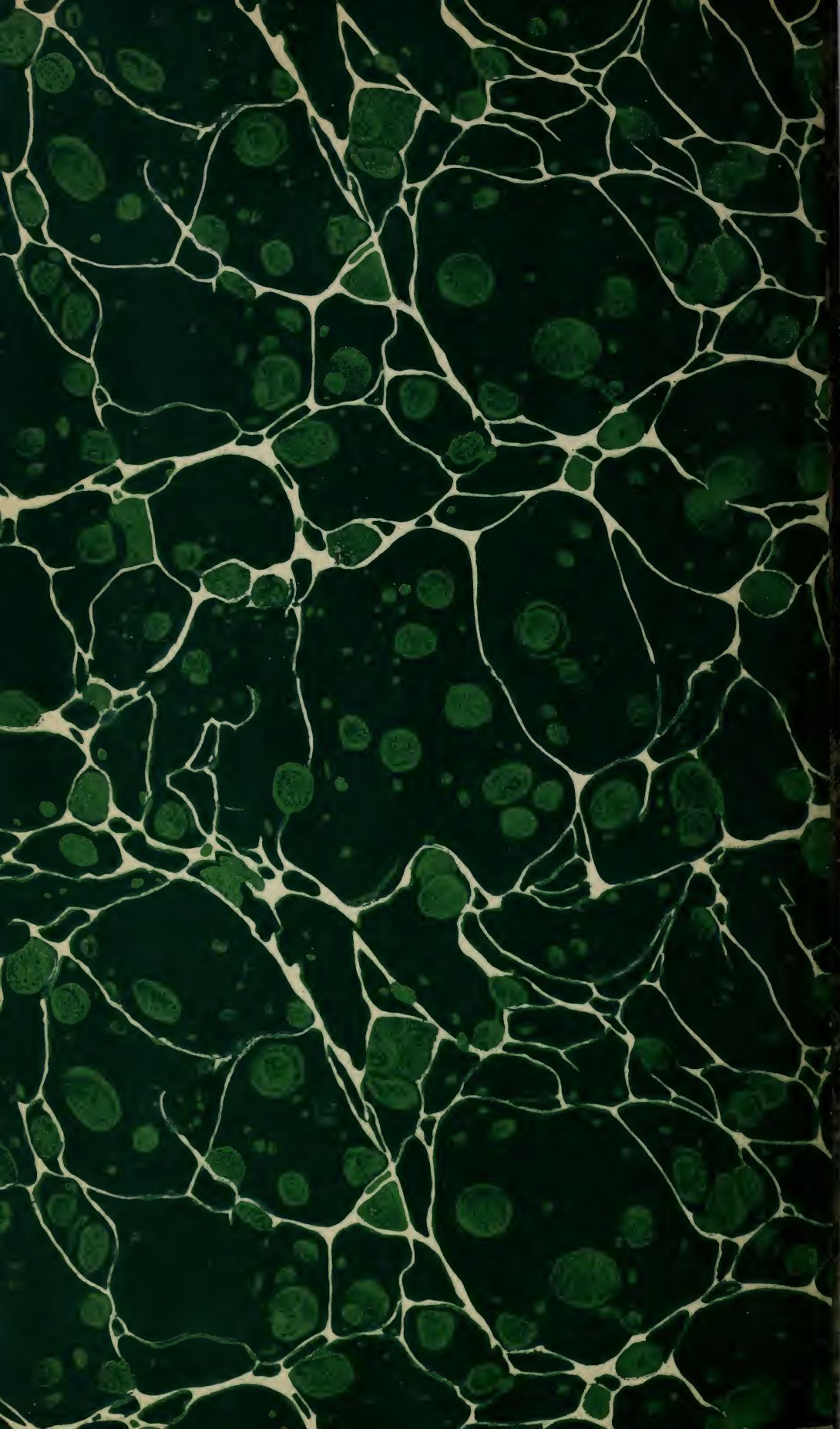
Spain—Continued.	No.	Tile drains.	No.
Login.....	869	Elliott.....	427
Mancha de Rafael.....	927	Wise.....	1743
Markham.....	937	Torrents.	
Moncrieff.....	998	Frisi.....	501
Roberts.....	1231	Gras.....	566
Roth.....	1242	Lauterburg.....	838
Tatham.....	1359	Salis.....	1267
Torricelli.....	1378	<i>see also</i> Floods.	
Zoppi and Torricelli.....	1763	Travancore, Madras Presidency.	
Storage of water.		Horsley.....	687
Acheson.....	5	Turbines.	
Brown, J. C.....	156	Bodmer.....	110
Chandler.....	260	Turia river, Spain, <i>see</i> Guadalaviva river.	
Craig.....	309, 310	Turkestan.	
Denton.....	373	Dinghel'shtedt.....	378
Fitz Gerald.....	447	Jijemski.....	776
Gipps.....	532	Umatilla reservation.	
Gordon, G.....	542	United States— <i>House of Representa-</i>	
Lippincott.....	858	<i>tives—Indian affairs, Com. on</i>	1458
Newlands.....	1093, 1095	Underground waters, <i>see</i> Artesian wells and	
Newlands, Hinton, Greene, and		underground waters.	
Fulton.....	1096	Union colony, Colo.	
Raftar.....	1208, 1209	Boyd.....	145
Schuyler.....	1279, 1281	United States, arid lands.	
Wright, John.....	1750	American society of irrigation en-	
<i>see also</i> Reservoirs.		gineers.....	15
Streteviguntum anicut.		Cowgill.....	307
Prendergast.....	1179	Greely.....	574
Sudbury river, Mass.		Gregory.....	583
Fteley.....	504	Mead.....	947, 954
Sugar cane.		Newell.....	1078, 1082, 1083, 1087
Schuyler and Allardt.....	1289	Nimmo.....	1102
Stubbs.....	1348	Schuyler.....	1287
Sugar Loaf reservoir.		Smythe.....	1315
United States.— <i>House of Representa-</i>		Symes.....	1355
<i>tives—Public lands, Committee on</i>	1483	Ulrich.....	1399
Sweetwater dam.		United States— <i>Agriculture, Depart-</i>	
Schuyler.....	1280	<i>ment of</i>	1403, 1408
Switzerland.		United States— <i>Agriculture, Depart-</i>	
Fellenberg.....	437	<i>ment of—Artesian and underflow</i>	
Lauterburg.....	838	<i>investigation and irrigation in-</i>	
Salis.....	1267, 1268	<i>quiry</i>	1410-1414
Tavernier.....	1360	United States— <i>House of Representa-</i>	
Sydney, Australia.		<i>tives—Irrigation of arid lands,</i>	
Dixon.....	382	<i>Committee on</i>	1459, 1461-1466
Tansa water works, Bombay.		United States— <i>House of Representa-</i>	
Clerke.....	273	<i>tives—Irrigation of arid lands,</i>	
Taxation of irrigated lands.		<i>Select committee on</i>	1467-1469
Best.....	99	United States— <i>House of Representa-</i>	
Tevere river, Italy, <i>see</i> Tiber river.		<i>tives—Public lands, Committee</i>	
Texas.		<i>on</i>	1474-1482
Hutson.....	698	United States— <i>Interior, Department</i>	
Texas agricultural experiment sta-		<i>of the—Geological Survey</i>	1503, 1510,
tions.....	1364	1518, 1520, 1524, 1527-1530, 1535, 1539-1541	
Texas state irrigation convention..	1365	United States— <i>Interior, Department</i>	
United States— <i>Agriculture, Depart-</i>		<i>of the—Land office, General</i> ..	1573-1581
<i>ment of—Experiment stations,</i>		United States— <i>Senate—Irrigation</i>	
<i>Office of</i>	1437, 1440	<i>and reclamation of arid lands,</i>	
<i>see also</i> Artesian wells and underground		<i>Select committee on</i>	1587
waters.		United States— <i>Senate—Public lands,</i>	
Tiber river, Italy.		<i>Committee on</i>	1591
Ponzi.....	1171	Victoria— <i>Royal commission on water</i>	
Tiber river canal.		<i>supply</i>	1624
Mora.....	1013	Arid America.....	1765
		National irrigation.....	1775
		Southwestern farm and orchard....	1776

- | | | | |
|---|------------|--|------------|
| United States—Continued. | No. | Water rights. | No. |
| <i>see also</i> Artesian wells and underground waters—Hydrography—Legislation—names of states—Reservoirs. | | Brabant | 148 |
| Uruguay river, hydraulics of. | | Championnière..... | 259 |
| Revy | 1222 | Endemann | 431 |
| Utah. | | Gould | 552 |
| Brough | 153 | Mead | 951 |
| Cannon | 222 | Tompkins | 1377 |
| Fortier | 475, 477 | Wait | 1685 |
| Gemmell | 521 | Wodon | 1744, 1745 |
| Gilbert | 527 | in Austria. | |
| Greely | 577 | Peyrer..... | 1154 |
| Kennison..... | 799 | in Canada. | |
| Newell | 1074 | Dennis..... | 370 |
| United States— <i>House of Representatives—Agriculture, Committee on.</i> | 1453 | in Colorado. | |
| Utah— <i>Engineer department.</i> | 1603 | Huston | 696 |
| Utah irrigation commission.... | 1615-1617 | in France. | |
| Ute, Southern, Indian reservation. | | Croos | 317 |
| Wright, J. G | 1749 | Jaubert de Passa | 771 |
| Venturi meter. | | Oliver | 1126 |
| Herschel | 649, 650 | in Kansas. | |
| Verdon canal, France. | | United States— <i>Interior, Department of the—Land office, General.</i> | 1584 |
| Brica | 150 | in Nebraska. | |
| Tournadre..... | 1381, 1382 | United States— <i>Interior, Department of the—Land office, General.</i> | 1584 |
| Verdon river dam. | | in Wyoming. | |
| Tournadre..... | 1381 | Buffum | 176 |
| Victoria. | | of Bear River. | |
| Acheson | 5 | Johnston and Breckons | 783 |
| Brady | 149 | of Los Angeles river, Cal. | |
| Dobson | 384 | Boggs..... | 113 |
| Gordon | 541 | of Missouri river and its tributaries. | |
| Victoria— <i>Royal commission on water supply.</i> | 1627, 1628 | Mead | 960 |
| Victoria — <i>Water supply department.</i> | 1629-1668 | of Yuba river, Cal. | |
| Villoresi canal. | | Manson..... | 934 |
| Cipoletti..... | 271 | on Bighorn mountains. | |
| Trevillini..... | 1392 | Mead | 959 |
| Vosges, department, France. | | <i>see also</i> Legislation. | |
| Foltz | 463 | Water storage, <i>see</i> Storage of water. | |
| Puvis | 1196 | Water supply. | |
| Wales, floods in. | | Abbott..... | 3 |
| Symons..... | 1356 | Brady | 149 |
| Walls. | | Burton | 181 |
| Castigliano | 246 | Dobson | 384 |
| Crugnola | 320 | McKinney..... | 897 |
| Howe..... | 691 | Newell | 1092 |
| Merriman | 973 | Rafters | 1206 |
| Pichault..... | 1157 | Ritso | 1230 |
| Weyrauch | 1714 | Rodda | 1234 |
| Walnut Grove dam. | | Stone | 1338 |
| Wagoner | 1683 | United States— <i>Interior, Department of the—Geological survey.</i> | 1510, 1520 |
| Washington. | | <i>see also</i> Artesian wells and underground waters—Hydrography—Rainfall—Storage of water. | |
| Newell | 1075 | Waterworks, construction. | |
| Nimmo | 1101 | Baker, M. N | 47 |
| Washington— <i>Arid lands commission.</i> | 1695 | Burton | 181 |
| <i>see also</i> Artesian wells and underground waters. | | Fanning..... | 436 |
| Water meter. | | Folwell..... | 464 |
| Foote..... | 469 | Salbach..... | 1266 |
| Forez canal | 470 | Tudsbury and Brightmore..... | 1396 |
| Freeman | 498 | Weirs. | |
| Target | 1358 | Cipoletti..... | 272 |
| Thompson, J | 1374 | Flynn, A. D., and Dyer..... | 449 |
| <i>see also</i> Venturi meter. | | Foote | 467 |
| | | Harcourt | 613 |

Weirs—Continued.	No.	Wyoming.	No.
Herschel	648	Bond and Wilson	130
Rhind	1223	Buffum	176
Torricelli	1380	Eldridge	426
<i>see also</i> Dams—Flow of water in canals, pipes, etc.—Sluices.		Newell	1077
Wells, <i>see</i> Artesian wells and underground waters.		Wyoming— <i>Engineer department</i> 1751, 1752	
West Indies.		Wyoming— <i>State board of control and special commission to select state lands</i>	1753
McGeachy	890	Wyoming— <i>State board of land com- missioners</i>	1754
Wietze river lowlands.		<i>see also</i> Artesian wells and underground waters—Duty of water.	
Dassel	344		
Windmills.		Yakima Indian reservation.	
Barbour	50	United States— <i>House of Representa- tives—Indian affairs, Committee on</i>	1456, 1457
Murphy	1022, 1023		
Perry	1150	Yakima valley, Wash.	
Witham river, Eng., drainage.		Fulmer	506
Hawksley	630		
Wheeler, W. H.	1716	Yuba river, Cal.	
Woltmann current meter.		Manson	934, 935
Baumgarten	65		
Gordon	544		

INDEX CARDS TO PUBLICATIONS OF THE U. S. DEPARTMENT OF
AGRICULTURE.

- Issue 1. Cards Nos. 1-142, indexing Yearbook, 1894-1898.
2. Cards Nos. 143-245, indexing Farmers' Bulletins 1-100.
3. Cards Nos. 246-403, indexing Yearbook, 1899; Farmers' Bulletins 101-118.
4. Cards Nos. 404-644, indexing Farmers' Bulletins 119-128;
Division of Accounts [special reports], 1894-1898;
Division of Soils, Bulletins 1-16; Circulars 1-7;
Division of Agrostology, Bulletins 1-24, Circulars 1-30;
Division of Botany, Bulletins 1-24, Circulars 1-29;
Contributions from the National Herbarium, v. 1-5.
5. Cards 645-743, indexing Yearbook, 1900; Farmers' Bulletins 129-141.



Form 172

8

FEB 10

L61B
No. 41

1

U. S. DEPARTMENT OF AGRICULTURE
LIBRARY

NOTICE TO BORROWERS

Please return all books promptly after finishing your use of them, in order that they may be available for reference by other persons who need to use them.

Please do not lend to others the books and periodicals charged to you. Return them to the Library to be charged to the persons who wish them.

The mutilation, destruction, or theft of Library property is punishable by law. (20 Stat. 171, June 15, 1878.)

Lib. 9



GPO

3-7888

